What Counts: Education Knowledge Management Practices

by

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Abstract

This study examines the concept of working knowledge management with respect to the North Vancouver School District as exemplified by their practices related to generating, capturing, and disseminating ‘Know How’ and promoting informed professionalism. The North Vancouver School District was found to be comparatively “advanced”, or knowledge-rich, in terms of its data use and knowledge translation capacity.

The thesis explores an important area of school district organization and leadership. It examines the school district’s response to issues of accountability and improving student improvement. The case study examines the district’s understanding of, and capacity for, working knowledge management. In this setting, one finds educators struggling to acknowledge that their instructional ideas and practice can be made visible and are improvable; struggling to foster a culture of collaboration and interaction within and across schools or among teachers; and struggling to systematically manage their working knowledge.

The British Columbia Ministry of Education planning and information processes are dominated with concerns about input and outcome data. The education system appears to ignore schools’ instructional practices from enquiry, discourse, and change.

I believe that knowledge management literature provides a useful tool to examine school district practices. Working knowledge management practices in this study are used as generic factors to examine education system practices that can facilitate change. The models presented in this thesis together offer vehicles for school district leaders to inform their consideration of how they manage their working knowledge activities.
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Chapter 1 Introduction

This study examines the concept of working knowledge management with respect to the North Vancouver School District (NVSD), as exemplified by their practices related to generating, capturing, and disseminating ‘Know How’ and promoting informed professionalism. The thesis explores an important area of school district organization and leadership. It examines the school district’s response to issues of accountability and student improvement in relation to a district’s understanding of, and capacity for, working knowledge management. In this setting, one finds educators struggling to acknowledge that their ideas and practice can be made visible and are improvable; struggling to foster a culture of collaboration and interaction within and across schools or among teachers; and struggling to systematically manage their working knowledge.

The Organisation for Economic Co-operation and Development (OECD) (2003, 4) has argued that “(t)he tradition of education systems is often characterized as knowledge-poor – in the sense that education systems still face difficulties in enabling schools and teachers to share, jointly develop and implement knowledge about their work and performance.” Davenport and Prusak (1998, xix) argue that “…what an organization and its employees know is at the heart of how an organization functions.” The case study submits evidence on what is from the perspective of what knowledge is being produced, acquired, or disseminated. For this study, I characterize knowledge management practices as organizational routines related to generating, capturing, and disseminating ‘Know How’ and promoting knowledge sharing within an organization and with the outside world.

For over 10 years I have worked in education policy and research settings where data or the lack of it has defined part of my practice. The moral imperative of my work is to ensure that the detailed data describing students’ learning history informs the practice of educators engaged in improving their students’ achievement.
In my professional life I have often been a participant observer who has partnered with others for the purpose of sharing in or participating in conversations that impact on education policy and practice. In this work setting, I have found that Ministries of Education, school districts, and schools that I have encountered in my practice reflect rarely in a systematic way on data and information for teaching and learning. Levin (2001, 4) argues that “(i)n terms of policy levers, reform programs have tended to emphasize mandatory approaches and threats, rather than building institutional understanding and capacity to act more effectively.” Fleming (1989, 136) argues that “… assessment at all levels provided (the Ministry of Education) an instrument of centralized control….“ The data and information methodically collected by Ministries of Education have traditionally included mandatory annual snapshots collected primarily for administrative purposes, including budgeting and accountability. Current data and information systems used in most schools cannot support school and school board instructional management needs. School districts rely on Ministry of Education (MoE) school-level aggregated information for a large amount of their annualized accountability information.

Although the data collected work well for vertical activities purposes, they are not widely used by ministry officials or school districts or researchers. For example, one educator, interviewed as part of my research, described the use of data as “not to track the sort of strategies that would be necessary to direct improvement of instruction…it was just tracking demographics, and reporting the necessary demographics to the various…authorities”

A major obstacle confronting educators and researchers who wish to use this data to “facilitate improvement of instruction,” is that they must spend a great deal of time learning how the existing data are organized and how the information may have changed over time with revisions of the data-collection instruments. For example, data about knowledge for learning that is collected by governments, if it is produced, is often published only at the provincial level. Only school districts or researchers with access to considerable time and money, as well as the
expertise involved in working with large data sets, can cope with the demands of such a steep learning curve.

Andrew Hargreaves (OECD, 2000, 232) argues that schools "are only beginning to be knowledge-producing and knowledge-mediating institutions." When schools approach knowledge for learning, Levin (2001, 30) referencing James March (1991) posits that organizations will tend "...to exploit accumulated skill and knowledge" or look "...for new knowledge and new ways of doing things." In the North Vancouver School District, the exploration and exploitation of knowledge are significant elements in the district's leadership process to effect change that will improve student achievement. With my work at Edudata Canada¹ in concert with pursuing my thesis, I found that I was in a unique position to undertake a case study, which, in telling a story about the NVSD, aims to help create an environment to support other educators and researchers to investigate questions about policy and practice in teaching and learning.

During the four-year period from 2000 to 2003, I had over 20 meetings with senior educators in the NVSD about their data and information needs. These conversations led me to learn about aspects of the district's culture of information and innovation. The educators I spoke with also emphasised the district's historical learning and research cultures. At the same time, I was able to assist the district leadership team in developing their understanding of data and information for their district accountability contracts and school plans. This work expanded and resulted in the initiation of a project to design and implement an education knowledge management plan for the NVSD. One of my NVSD colleagues described the results of our collaboration:

...(we) are now a lot more aware that data has some importance, but it only has importance if it is meaningful, can be stored, can be regurgitated in terms of producing

¹ Edudata Canada is a research centre at the University of British Columbia that provides information and data knowledge mobilization services for institutions and organizations that wish to promote the use of their data in research and in the teaching and learning community.
realistic reports, and the understanding of that is that more people now in the district are starting to speak the same language, because it is involving a wider range of people instead of just the project manager here for this project, the project manager there, etc.…there’s a communication as to the meaning of the data which is evident.

From our first conversation, the superintendent and his colleagues, for their part, supported my intention to use our collaboration working on their planning activities as the basis for this case study.

My consent letter (Appendix A) for this research describes the setting for this collaboration as:

Victor Glickman is a doctoral student in The University of British Columbia, Faculty of Education Educational Doctorate in Educational Leadership and Policy program. He is also Director of Edudata Canada a research centre in the U.B.C., Faculty of Education. At Edudata Canada his work involves assisting researchers and school districts in accessing information to answer policy and research questions. The Ed.D. program is centrally concerned with educational practice. The program is grounded in the belief that it is important for doctoral students to engage in scholarly discourse about understanding, critiquing, and improving practice in educational settings. Mr. Glickman is presently assisting the NVSD in building their indicator data base and data warehouse.

This study reflects my practice-based research in assisting the district to deal with their education data and information, in preparing accountability plans and school plans for the Ministry of Education, and in constructing a student cohort database and information plan. Jarvis (1999, xi) argues that practice-based research is “…about seeking, in a most rigorous manner, to understand and create efficient working practice…. “ In this study I found that the educators I worked with were consumers and producers of knowledge. I also become aware that educators have difficulty differentiating among the three related concepts of data, information, and knowledge. After Edudata’s work in the district for over two years, the district has added to their capacity to use North Vancouver student education data to inform their district accountability contract, school planning, and reporting. The superintendent has stated that “Edudata’s efforts on
working with us to build an education data warehouse has meant that we are better prepared to continue strengthening our evidence-based teaching and learning programs.”

In this study I adopted Davenport and Prusak’s explanation of working knowledge.

Davenport and Prusak (1998, 1-2) argue that some authors:

...identify more than three entities of data, information, and knowledge-going on, for example, to describe wisdom, insight, resolve, action, and so forth. Since we've noticed that firms have enough difficulty distinguishing among three related concepts, however, we're not inclined to address more. For practical purposes, we'll lump higher-order concepts such as wisdom and insight into knowledge. And things like "resolve" and "action," while desirably pointing to the need to do something with knowledge, we'd put into a different category of “things you do with knowledge” rather than a variation on knowledge itself.

This explanation of working knowledge is the basis on which I studied how the North Vancouver School District managed what they know. Educators know things, knowledge management means putting in order that knowledge to make it more accessible. Elmore (2002, 34) states that “…a knowledge-based organization, which is what schools will become through the practice of improvement, are organizations designed around the authority of expertise. Education knowledge for learning is a core technology of our schools.” Sullivan (1988, 118) pointed out that teachers “because of their knowledge and professional experience…expect to be involved in decisions which directly or indirectly affect the quality of instruction.” DiBella and Nevis (1998, 28) argue that one way to understand organizational learning is to examine what knowledge is being produced, acquired, or disseminated in the organization. Sullivan, Elmore, and DiBella and Nevis’ arguments set the stage for looking at educators’ knowledge management practices. I believe the knowledge management literature provides a useful tool to examine the processes that govern the creation, dissemination, and utilization of knowledge in school districts.

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2 Unpublished correspondence
Larry Cuban (1984, 132) makes the point that, in general, researchers have paid insufficient attention to the role of district leadership. He points out that:

...concentration upon the local school site and the principal’s leadership dominates the research. This implicitly ignores the pivotal role that school boards and superintendents play in mobilizing limited resources, giving legitimacy to a reform effort and the critical interplay between central office and the school site that can spell the difference between implementation success and failure.

Building the concepts of data information and knowledge into an integrated account of school and school district leadership is a difficult task. What is needed are conceptual models or schema for their knowledge management practices. With the aid of the schema, the little-examined school district organization related to data, information, and knowledge may be seen to fall into unified patterns. Research into the practice of school district educational leaders as it relates to their capacity to use data, information, and knowledge can, perhaps, offer new insight into a specific area of the education system at the district level that has gone unexamined.

Every district leadership team has a management “repertoire”, a set of skills, devices, or attributes that is reflected in the day-to-day operations. The repertoire of education leaders in North Vancouver can be characterized in the following manner: it adopts a change management strategy (Fullan, 2001, Kotter, 1996); it endorses a philosophy of education that values "the triangle of learning" the relationship between students, teachers, and the curriculum (Carroll, 1963; Hawkins, 1973; Muncey & McQuillan, 1993; Sizer, 1984); and it implements service delivery models to improve and facilitate improving student achievement. In addition the district has adopted and adapted the government’s accountability processes to facilitate planning as learning (de Geuss, 1988). Seen from a knowledge organization perspective (Choo, 1996) this school district is developing into a ‘knowing organization’ that is working to use information to construct meaning, create knowledge, and make decisions. Leithwood (1999, 19) in discussing educator accountability identifies the following activities as relevant organizational policies and practices: ensuring that specific organizational qualities considered to be critical to effectiveness are reflected in their
schools or districts meeting standards of professional knowledge and skill; meeting standards of moral behaviour; performance of best professional practices or specified duties; (and) skilfully using organizational processes believed to contribute to the successful introduction of change (such as strategic planning, school improvement planning, and the carrying out of quality reviews). Schmoker (1996, 2), one of the originators of the school improvement movement, proposes that the combination of meaningful teamwork, clear measurable goals, and the regular collection and analysis of performance data constitute the foundation for the results. Implementation of Leithwood and Schmoker's propositions imply systemic and systematic knowledge-based activity. The provincial accountability agenda adopts three of these ideas: school improvement planning, clear measurable goals, and the regular collection and analysis of performance data. This three-step prescription sets the stage for a school district leader's systematic knowledge management practices. A principle purpose of the British Columbia government's knowledge of learning (assessment) activities was said to be to help the province, school districts, families, schools, and school planning councils evaluate how well important skills are being addressed and make plans to improve student achievement. The government's initiatives did not include diagnostic help for educators. In 2002, the BC Provincial Government accountability initiative mandated performance targets for school achievement for all BC school districts.

The government’s 2002 accountability agenda underlined knowledge of learner outcomes. The accountability program was virtually silent on teaching and learning, including meaningful teamwork, pedagogy, professional development, rigor of the curriculum, teacher preparation, teacher experience and attendance, class size, availability of appropriate technology-assisted instruction, and learner engagement. Accountability was constructed around student outcome data, satisfaction surveys, grade-to-grade transition, and graduation rates. David Hargreaves (2003) makes the point that information only flows vertically within the education system, from government department to school. The BC agenda appears to mirror Hargreaves
observation. Fleming (1989) contends that historically British Columbia emphasized a vertical flow of information from Ministry to districts and schools. Black and Wiliam (1998, 1) assert that present policies:

...in many...countries seem to treat the classroom as a black box. Certain *inputs* from the outside -- pupils, teachers, other resources, management rules and requirements, parental anxieties, standards, tests with high stakes, and so on -- are fed into the box. Some *outputs* are supposed to follow: pupils who are more knowledgeable and competent, better test results, teachers who are reasonably satisfied, and so on.

British Columbia government policies seem to fit this black box prescription. Black and Wiliam (1998,1) pose the important question, “how can anyone be sure that a particular set of new inputs will produce better outputs if we don't at least study what happens inside?” The government has constructed an agenda that is functional and deterministic and appears to assume that innovative and effective instructional and student engagement strategies will arise from strategies linked to indicative planning. Levin (2001, 151) contends that to facilitate transformations in schools, “changes in elements such as work roles, compensation systems, accountability systems and management structures may also be necessary....” The provincial government appears to be relying exclusively on the commitment of its educational leaders to produce lasting change.

The NVSD is following in the wake of the provincial accountability program. The district plan contains district and school baselines and targets for reading and mathematics performance, aboriginal success rates, and safe and caring environments. Its district road map also identifies strategies relating to instruction and student engagement.

Elmore (2002) posits that reforms that are based on accountability will fail unless policymakers also adopt a strategy to ensure that educators have an understanding of the knowledge and skills needed to help students succeed. Leithwood and Aiken (1993, 133) contend that “(i)nstructional services are obviously at the heart of a school district’s reason for being.” North Vancouver holds effective instruction to be a key objective in all their district planning documents.
I will follow Lundvall’s (1998) lead by using his taxonomy of knowledge as a framework to assess knowledge management practices; Dibella’s (1996) complementary propositions for examining organizations’ knowledge capabilities or preferences; and Fullan’s (1982, 2001, 2002) perspectives on change management to tease out and analyze the knowledge management practices embedded in the provincial framework, district, and school plans. I propose models for informing school district leaders’ deliberations of how they organize their districts and manage their working knowledge. This thesis looks at how educational leaders can focus on working knowledge management practices that will allow them to improve student achievement in the complex environment of public education. I will review in Chapter 2 a selection of literature about knowledge management in general and examine how educators view knowledge. "Knowledge management, like knowledge itself, is difficult to define" (Earl, 2001, 215). I look at examples drawn from the knowledge management literature. The chapter looks in particular at economists’ and educators’ treatment of knowledge, knowledge types, and knowledge management typologies. Chapter 3 discusses the theory and application of case study methodology. I discuss the mixed methods design that I adopted for this case study. The chapter details the methodology used in the case study: the knowledge management practices survey; the database of the elements of the district and school plans; leadership team interviews; district and ministry documents collection; analysis of the information; and integration of the results. In Chapter 4, I discuss the alignment of responsibility, accountability, and authority in the British Columbia school system. I put forward a Knowledge Profile of the Ministry of Education’s accountability reporting policies and the chapter also describes ministry data activities. Chapter 5 describes the situation in the NVSD with regard to its knowledge management practices in light of various planning processes that operate within the district. In Chapter 6, I look at the North Vancouver district educators’ views on knowledge management practices in relation to policy and strategies; leadership; incentives; knowledge capture and acquisition; training and
mentoring; and communications. Their views are examined in terms of the taxonomy of knowledge: 'Know Why', 'Know How', 'Know What', and 'Know Who' (Lundvall, 1994, 1998). In Chapter 6, I also explore the perspective of leading change and managing knowledge management practices. Chapter 7 takes up the subject of how knowledge management can play a role in enhancing school district and schools' organizational practice, program implementation, and teaching and learning. I discuss how educators need to cultivate the capacity to systematically tell stories directly about what facts are crucial when it comes to triggering the search for new solutions; what causalities are at the core of the dominant models applied; what skills and competencies are crucial; and who in their organization knows what in contrast to who knows what to do. This framework, I believe, offers school district leaders a tool to examine, discuss, and lead change in their school districts and schools. I also put forward a model for assessing where a school district may be on their knowledge management passage. Chapter 8 begins with a brief discussion on how the NVSD demonstrates a strategic interest in managing what they know. I explain how a school district working knowledge profile can be useful for dialogue about the style of educational innovation in place, the role of knowledge in connection with education, as well for telling critical stories about educator beliefs. I identify further research questions that need to be explored. The chapter ends with a discussion on the support that school districts need from provincial and federal governments and national policy bodies to address educator working knowledge management.
Chapter 2  Literature Review

This literature review frames the centrality of change management and working knowledge management for assisting school district organizational leaders in improving student achievement. Davenport and Prusak (1998, 52) posit that "(w)ithout knowledge an organisation would not be able to organize itself; it would be unable to maintain itself as a functioning enterprise." I draw on a broad range of literature about knowledge management in general and discuss how knowledge is understood in the education community. This section focuses on four areas: the knowledge economy, knowledge types, knowledge management typologies, and ties to models for leading change management.

Knowledge-based theories of organizations are all in their infancy. The knowledge management literature also flows from many disciplines: economics, philosophy, computer science, and sociology. This literature includes knowledge-based perspectives of firms; competitive strategies about firms' intellectual resources and capabilities; knowledge management in practice; processes that create new knowledge; norms that support knowledge sharing; and the management of intellectual capital (Woo, 2002). To guide the analysis of this case study, I have adopted two perspectives from the literature: the knowledge typology of ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ (Lundvall, 1994, 1998); and the change management perspective that aligns knowledge management practices with the pursuit of effective leadership (Fullan, 2001, 2002). I believe these perspectives offer useful frameworks for examining how school districts manage what they know.

Knowledge Economy

Hargreaves (2003, 1) proposes that “we live in a knowledge economy, a knowledge society.” Ikujiro Nonaka and Hirotaka Takeuchi (1995, 32) point out that “most economic

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3 A Google search found over 85,000 references to knowledge management.
theories have treated knowledge implicitly or explicitly as an important factor in economic phenomena." Joseph Schumpeter (1987), Frederick Hayek (1978), Robert Solow (1956, 1992, 1994), Kenneth Boulding (1996), Kenneth Arrow (1962), Alfred Marshal (1956), inter alia are credited as scholars who recognize the importance of knowledge for economics. Fritz Machlup (1980, 228) is credited with introducing terms such as knowledge occupation and knowledge industry. He also proposed that “(a)ll schooling...had to be included in a comprehensive study of knowledge...” (1980, xvi).

The OECD (1996a, 1996b, 1997) frequently published reports and proceedings on the ‘knowledge economy’. According to the OECD (1996, 3), “the term “knowledge-based economy” resulted from a fuller recognition of the role of knowledge and technology in economic growth. Knowledge, as embodied in human beings (as “human capital”) and in technology, has always been central to economic development.” The knowledge economy is seen today as one of the keys to social and economic development (Stiglitz, 1999).

National policies on the knowledge economy can be found in Canada, the United States of America, the United Kingdom, Ireland, Australia, and New Zealand. For example, former Canadian Prime Minister Jean Chrétien (2002) argues that “(i)n the new, global knowledge economy of the 21st century prosperity depends on innovation, which, in turn, depends on the investments that we make in the creativity and talents of our people.” Porter (1990) stresses the importance of the economics and productivity of knowledge as the basis for national competition within the international marketplace. Drucker (2001, 2) states that “the next society will be a knowledge society. Knowledge will be its key resource, and knowledge workers will be the dominant group in its workforce.” Castells (1996) describes the role of knowledge in our own and other ages as critical in the maintenance and growth of individual organizations, and local and global economies, and that the contemporary global economy places distinctive demands on knowledge production at local and global sites. Prusak (2001, 1) argues that the “...combination
of global reach and speed compels organizations to ask themselves, “What do we know, who knows it, what do we not know that we should know?”

**Knowledge Types**

In the knowledge management literature a great deal of emphasis is given to understanding the differences between data, information, and knowledge and between tacit and explicit knowledge. Cleveland (1982) proposed that there are many ways to define the data, information, and knowledge elements of the hierarchy. According to Ackoff (1989, 3), “the hierarchy of the content of the human mind covers 1) data: symbols; 2) information: data that are processed to be useful; provides answers to “who”, “what”, “where”, and “when” questions; 3) knowledge: application of data and information; answers “how” questions; 4) understanding: appreciation of “why”; and 5) wisdom: evaluated understanding.” In organizations, knowledge often becomes embedded not only in documents or repositories but also in organizational routines, process, practices, and norms.

All organizations contain a mixture of knowledge types. According to Nonaka and Takeuchi (1995), the knowledge of firms can be characterized using Polanyi’s (1966) distinction of tacit or explicit knowledge. Tacit knowledge is characterized in the literature (Dixon, 2000; Inkpen, 1996; Polanyi, 1966; Nonaka & Takeuchi, 1995; von Krogh, Ichijo & Nonaka, 2000) as being personal, intuitive, and emotional; or based on beliefs; know how, experiences, and values. Explicit knowledge is seen as more concrete; able to be captured, codified, and communicated. It is knowledge that “can be expressed in words and numbers, and easily communicated and shared in the form of hard data, scientific formulae, codified procedures, or universal principles” (Nonaka & Takeuchi, 1995, 8). von Krogh et al (2000, 6-7) make the argument that:

While the idea of tacit knowledge makes sense intuitively to most people, managers often have a hard time coming to grips with it on a practical level. Recognising the value of tacit knowledge and figuring out how to use it is the key challenge in a knowledge-creating company, one that requires extended conversations and good personal
relationships – that is knowledge enabling. Tacit knowledge may seem too mysterious to be usefully or consistently applied in a business situation, but this shifting context-specific quality is precisely what makes it a powerful tool for innovation.

Nonaka and Takeuchi (1995) see tacit knowledge as the knowledge which is obtained through experience. Teachers and schools develop strong tacit beliefs through experience. Black (1998, 8) offers examples of teacher beliefs such as:

...the teacher assumes that knowledge is to be transmitted and learned, that understanding will develop later, and that clarity of exposition accompanied by rewards for patient reception are the essentials of good teaching, (or) beliefs teachers hold about the potential of all their pupils for learning.

Fenstermacher (1994, 38) makes the point that teachers’ “… discourse about practice is framed in the mental language of intentions, desires, frustrations, aspirations, disappointments, surprises and so forth.” In contrast, Fenstermacher (1994, 39) describes research discourse about teaching as structured around quantitative and qualitative forms of inquiry. He argues that when you ask a teacher about their knowledge, what you actually get is a story of their beliefs about their knowledge. The experience that created the educators’ beliefs in the first place may or may not be relevant but they guide decisions and form borders.

Historically, literature about teachers’ instructional practice originated in psychological or educational psychology research. Carroll’s (1963, 723) model of learning from an educational psychologist perspective looks at “…why pupils succeed or fail in their learning and (how) to assist in the remediation of learning difficulties.” Stigler and Hiebert (1997) identify the need to document explicit knowledge about instructional practice. They argue that “(w)e must study directly the processes that lead to learning in the classroom, for if we do not understand these processes we will have little chance of improving them” (1997, 2). Stigler and Hiebert (1997) point to the existence of explicit knowledge related to the complex task of learning. They assert (1997, 2) that “most other professional and industrial fields have determined that improving the quality of the processes is the surest road to improving products, but we in education have yet to
learn this lesson.” Stoll, Fink, and Earl (2003, 78) see teachers at the heart of school improvement. They point out that “…with all the changes in the world and new understandings about learning it is essential that (teachers), too, keep learning” (2003, 78). Flemming and Raptis (2003) argue that writing on improving instruction is not fully connected to leadership research. These examples of knowledge types point to a close relationship between the types of knowledge of the various members in an organization and the way the organization behaves. Prusak (2001, 2002) referencing Gilbert Ryle and Michael Polanyi, asserts that “(a)lmost from the beginning, knowledge management has explored the differences between tacit and explicit knowledge, between “know how” and “know what.” The emphasis on the tacit dimension of their knowledge may lead educators to emphasize the place of intuition in their practice and ignore explicit knowledge.

Knowledge Management

Authors like Earl (2001), Davenport and Prusak (1998), Dixon (2001), Drucker (1994, 2001), Fullan (2001, 2002), Lundvall (1994, 1998), Nonaka and Takeuchi (1995), and Senge (2000, 2002) have written about different aspects of how organizations create, provide, share, use, and protect knowledge. Drucker (1994, 16) proposes that “…only the organisation can provide the basic continuity that knowledge workers need in order to be effective. Only the organisation can convert the specialised knowledge of the knowledge worker into performance.” Davenport and Prusak (1998, 5) note that in organizations knowledge “…often becomes embedded not only in documents or repositories but also in organizational routines, process, practices, and norms.” Baets (2000, 41) asserts that “(w)ithout the adequate knowledge base and the capability to update and put it into practice, it is difficult to live up the expectations of the changing environment.”
Knowledge management, like organizational learning, depends on social construction, tacit and explicit types of knowledge, vision, and trust. Prusak (2001, 104) makes the case that:

...rather than build from theory, (knowledge management) looks at what people actually do—the circumstances in which they share knowledge or do not share it; the ways they use, change, or ignore what they learn from others. Those social facts guide (or should guide) the development of knowledge management tools and techniques.

The OECD study on Knowledge Management in the Learning Society (2000, 31), in discussing education, proposes that "(n)either the transmission of scientific knowledge, nor teacher’s continuous learning processes, as individuals or in groups, can be adequately understood without addressing the more complex question of how knowledge is effectively, developed, disseminated and applied in practice." Knowledge management literature reflects a tension in relation to learning organization arguments. Nonaka (1996) proposes that the learning organization model is not clear about how knowledge is captured, created, leveraged, and disseminated. He believes that the learning organization model makes it difficult to explain an innovation process. Although many organizations do not know or use the term "knowledge management", they use many knowledge instruments as part of their management repertoire. What has changed, however, is the relative importance of the process of knowledge and information sharing as a source of greater performance and better legitimacy of organizations.

Several authors propose knowledge management orientations that, when present, enable organizational learning. Nevis, DiBella, and Gould (1995) put forward a three-stage model that includes knowledge acquisition – the development or creation of skills, insights, relationships; knowledge sharing (the dissemination of what has been learned); and knowledge utilization (the integration of learning), so it is broadly available and can be generalized to new situations. Dibella (1996, 363) suggests that the capacity to maintain or improve an organization’s performance involves each stage. Similarly, Dixon (2000, 31) posits that "organizations need to balance two important kinds of knowledge: (1) creating new knowledge, and (2) leveraging..."
knowledge across organizational boundaries.” Choo (1996) asserts that an organization uses information in three strategic ways: 1) to make sense of change in its environment; 2) to create new knowledge for innovation; and 3) to make decisions about its course of action.

A central component of organizational decision making in general is information deriving from good data and sound analysis. Ruggels (1998, 81) classifies knowledge-focused activities as “those activities generating new knowledge; accessing valuable knowledge from outside sources; using accessible knowledge in decision making; imbedding knowledge and processes; representing knowledge in databases; facilitating knowledge growth through culture; transferring existing knowledge into other parts of the organization; and measuring the value of knowledge assets and/or impact of knowledge management.”

Dibella (1996), Dixon (2000), Choo (1996), and Ruggles’ (1998) arguments about how organizations act in relation to knowledge are critical for the examination of education leaders’ practice. They are proposing that organizations have a wealth of internal knowledge to draw on and learn from and need to align management approaches with what is being learned with work demands and systems outcomes. Each author is also calling attention to the awareness that knowledge is a distinct factor of production and they are arguing for the strategic management of this intellectual capital.

Lundvall and Johnson (1994, 27) have introduced four distinctions between different kinds of knowledge to develop the typology of ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’. Lundvall (1999, 21) explains that the roots of these categories go:

...back to Aristotle's three intellectual virtues. Know why is similar to Episteme and know-how to his concept Techne. But the correspondence is not perfect since we will follow Polanyi and argue that scientific activities always involve a combination of know-how and know-why. Aristotle's third category--Phronesis--relates to the ethical dimension...the need for a social and ethical dimension in economic analysis and about the importance of trust in the context of learning.
Lundvall (1998), building on the four-part typology, posited that one can understand knowledge by asking what facts are focused upon; what causalities are looked for; how actors go about solving a problem; and how agents relate to each other in terms of cooperation, subordination, and competition. Lundvall and Johnson (1994, 24) conceptual framework connects knowledge and learning to organizational behaviour and knowledge management practices.

The OECD (1996, 14) integrates Lundvall and Johnson’s knowledge typology of ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ in their publication discussing Knowledge Management in the Learning Society. They report that the categories “…can be useful for a discourse about the role of knowledge in connection with education and training.” Hargreaves (2003a, 25), referencing the OECD work, takes up the argument that knowledge organizations operate by sponsoring ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’. He (2003a, 26) focuses on the concept of “Know Who” and argues that many teachers are becoming proficient at working with their fellow educators. Hargreaves (2003a, 27) (along with Michael Fullan) also proposes that professional working communities are the foundation for new teacher professionalism. Fullan (2003, xi) emphasizes that “schools are beginning to discover new ideas, and knowledge sharing is essential to solving learning problems. The knowledge management metaphor can make more visible some parts of the process of learning in firms and in schools.”

Fullan and Hargreaves’ ideas situate ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ in the activities of what they describe as new professionalism and professional learning communities. Lundvall and Johnson (1994, 38-39) argue that “the increasingly systemic character of new technologies, where old borders between technical and scientific disciplines are broken down, makes it necessary to review the traditional departmentalised organisation of academic training and research.” I believe these perspectives, together, can inform the actions of education system leaders in relation to knowledge management and school district organization.
Application of Knowledge Management in Schools

The knowledge management models described earlier in the chapter have direct relevance for education. Hargreaves argues that "(s)uccessful schools, like successful businesses, have to learn how to use to the full the intellectual capital trapped in the heads of their members" (2000, 3). Black (1998), as mentioned above, asserts that current education policies in many countries treat the classroom as a black box. He adopts a black box systems metaphor for discussing education, knowledge, and public policy. Black (1998, 1) states that:

Certain inputs from the outside -- pupils, teachers, other resources, management rules and requirements, parental anxieties, standards, tests with high stakes, and so on -- are fed into the box. Some outputs are supposed to follow: pupils who are more knowledgeable and competent, better test results, teachers who are reasonably satisfied, and so on.

This approach reflects a model of education practice where what teachers and students do in classrooms is what powers learning. Leithwood and Aiken (1993, 133-134) identify as crucial facets of instruction: a constructivist view of the learning process, the rubric of effective teaching/direct instruction, aligning curricular goals with content and objectives for assessing students, selective curricular content, organization of instruction for complex goals, and large repertoires of instructional practice. Elmore (1997, 294-295) describes the core technologies of schooling as how teachers describe and understand the nature of learning; the students' role in learning ideas about knowledge and learning manifested in teaching and class work; structural arrangements of schools; and the processes for assessing student learning and communicating it to students, teachers, parents, administrators, and others. Educators utilize their own knowledge of the technology of schooling and the knowledge of others. These elements can make up a knowledge management focus to guide schools. Elmore (1997, 2) describes this approach as a focus on what students should be taught (content standards); changing the structures and processes by which schools are held accountable (student performance standards, assessments,
rewards, and penalties); and changing the governance structures by which accountability is
defined (site-based management). He (1997, 2) also makes the point that “one has to assume that
changes in policy and organization will result in a different kind of teaching, which will in turn
result in a different kind of learning for students, who will in turn demonstrate this learning by
doing better on measures of performance.”

The school district and schools are the key local setting where educators learn. Educators
are consumers and producers on the subject of the knowledge of and knowledge for learning
reflecting the core technologies of schooling. Sizer (1984) states that teaching and learning
involves a dynamic triangle connecting students, teachers, and the curriculum. Hawkins (1973)
describes the interactive nature of learning as points in a triangle of teacher, student, and content.
The Coalition of Essential Schools focuses on the “triangle of learning” that is knowledge about
the relationship between students, teachers, and the curriculum (Muncey & McQuillan, 1993,
487) plus the structural changes schools must make to improve and facilitate that triangle. The
National Education Commission on Time and Learning (1994) describes the knowledge of
teaching as acquiring much more in-depth understanding of subject matter and pedagogy. In the
report the commission reference McLaughlin and Talbert’s (1992, 3) argument that “knowledge
not simply of a subject area, but (it is) also of how to teach it—how to select, represent, and
organize information, concepts, and procedures...so that subject matter knowledge can be
transformed into teaching for understanding.” The commission observed that the United States is
asking teachers to do many things they may not know how to do and have little time and
opportunity to learn.

Earl (2000, 62) makes the critical point that “(t)he questions that arise are at the heart of
any reform and are deeply rooted in Plato’s Paradox – We don’t know what we don’t know!
...(W)e need to ask the questions: What are the practices that are supposed to change? What
professional development experiences are likely to result in these changes? How will you know that they have?"

The Institute for the Study of Knowledge Management in Education (Petrides, 2003, 10-11) describes knowledge management "...as a framework or an approach that enables people within an organization to develop a set of practices to collect information and share what they know, leading to action that improves services and outcomes." Stevenson (2000) defines knowledge management as the collection of knowledge on best practices or lessons learned; the sharing of those practices and lessons with those who can use them; and the application of the practices or lessons for subsequent innovation and/or intervention in the classroom. Hannum (2001, 48) describes the goal of knowledge management in education as improving the practice of teaching by gathering tacit and explicit knowledge from experienced teachers; organizing this knowledge, creating repositories for this knowledge; establishing interfaces to this knowledge, maintaining and growing this knowledge base; and bringing teachers into the practice of developing and using the knowledge base.

Hargreaves (2000), Leithwood and Aiken (1993), Elmore (1997), Sizer (1984), Muncey and McQillan (1993), and Maclaughlin and Talbert (1992) are all arguing that improving the quality of teaching in the classroom will impact student achievement. Darling-Hammond (2000, 48) contends that "(s)ubstantial evidence from prior reform efforts indicates that changes in course taking, curriculum content, testing, or textbooks make little difference if teachers do not know how to use these tools well and how to diagnose their students' learning needs." It seems logical that the applications of knowledge management practices in schools can support educators as learners in improving the quality of their practice.
Changing and Improving Instructional Practice

Instructional practices, as identified in the literature and in the study of exemplary schools, includes examination of instructional models, technology, organizational paradigms, interaction schemes, processes, and assessments. Hargreaves (2003a, 24) describes teachers as catalysts of the knowledge society and (2003a, 24) argues that teachers need to adapt their practices and:

...build a new professionalism where they: promote deep cognitive learning; learn to teach in ways they were not taught; commit to continuous professional learning; work and learn in collegial teams; treat parents as partners in learning; develop and draw on collective intelligence; build a capacity for change and risk; and foster trust in processes.

Fullan (2002, 87) argues that effective educational leaders understand the value and role of knowledge creation and that they make it a priority and set about establishing and reinforcing habits of knowledge exchange among organizational members. He (2001b) also contends that effective educational leaders work with conceptions of moral purpose, relationship building, knowledge generation, understanding the change process, and coherence building. Elmore (1997, 7-11) identifies seven organizing principles for educational leaders to change and improve instructional practice:

1. It's about instruction...and only about instruction – the central idea is that instruction is the work of everyone in the system.
2. Instructional change is a long, multi-stage process – engage teachers and principals in a variety of instructional practices that move them through various stages of the process in different domains of practice.
3. Shared expertise is the driver of instructional change – the enemy of instructional change is isolation.
4. Good ideas come from talented people working together – a focus on people working together to generate new ideas.
5. Set clear expectations, then decentralize – emphasizes the creation of lateral networks among teachers and principals and the selection of people with a strong interest in instructional improvement. A corollary of these principals is the idea of setting clear expectations and then decentralizing responsibility.
6. Collegiality, caring, and respect professionalism, and working in a school system, is not a narrowed version of life; it is life itself, and it should take into account the full range of personal values and feelings that people have.
Elmore’s organizing principles complement the change management models described later in this chapter by Kotter (1996) and Fullan (2001). A key component of Elmore’s argument is that the structure of schools and districts has shielded the instructional core of schools from disturbance, examination, and improvement. Elmore (2000, 8) argues that:

The educational change literature is full of injunctions to respect the autonomy of teaching and the mystery of its fundamental practices hence the inviolability of individual teachers’ choices about what to teach and how. This normative environment is a direct result of an institutional structure that is deliberately and calculatedly incompetent at influencing its core functions.

Elmore’s principles for changing and improving instructional practice offer a prescription for (knowledge) management in opposition to mystery. Hannum (2001) argues that the role of knowledge management in education organizations is to manage and to function in support of the improvement of the practice of teaching by gathering tacit and explicit knowledge, organizing this knowledge, and mobilizing its use. Leithwood and Aiken extend the mobilization metaphor when they propose linking systematic and systemic improvements in instruction to external standards or expectations. In their handbook, School District Monitoring (1993, 135-136), Leithwood and Aiken identify examples for measuring of instruction (Table 1).
<table>
<thead>
<tr>
<th>Strategies</th>
<th>Measuring Instruction</th>
</tr>
</thead>
</table>
| 1. instruction is carefully planned | teachers plan collaboratively for horizontal and vertical integration of objectives and content  
a clear framework is established for pursuing themes and sub-themes and for the use of individual and small group activities  
provision is made for diverse student experiences |
| 2. instructional goals are appropriate and clear | instructional goals, content, and the focus of student assessment are carefully aligned  
goals are compatible with school, district, and provincial goals and priorities  
students are assisted in developing a clear understanding of the purposes for instruction |
| 3. instructional content is challenging | subject matter content is selected on the basis of its authentic reflection of appropriate academic discipline, relevance to students’ interests, and stage in students’ development |
| 4. instructional strategies are suited to instructional objectives and students’ needs | teachers are skilled in the use of a large repertoire of instructional strategies  
teachers establish a relaxed, engaging physical and social environment which minimizes distractions from the purposes for instruction  
students’ opportunities to construct their own knowledge are maximized; time spent passively “absorbing” knowledge is kept to a minimum |
| 5. instructional strategies reflect defensible principles of learning | there is evidence in the classroom of:  
cooperative activity, extensive interaction use of factual questions to establish a foundation followed by higher order questions requiring more interpretation discussions kept very concrete demonstrations of relevance of curriculum to everyday world of students fairly rapid pace of instruction limited focus within a single “lesson” actively structured and directed classroom activity |
| 6. instructional time is effectively used | time lost to absenteeism and lateness kept to minimum classes begin promptly transition time kept to a minimum student behaviour managed in such a way as to minimize disruptions during class time on task is consistently high |
Leithwood and Aiken’s measures provide an important reference point for examining knowledge management in relation to change and improvements to instructional practice. Their measures represent a key dimension of the knowledge that a community of educators could address in order to inform changes to instructional practices. I believe Leithwood and Aitken's monitoring system complements the change management models describe below.


**Table 2: Change Management**

<table>
<thead>
<tr>
<th>Vision</th>
<th>Fullan</th>
<th>Kotter</th>
<th>Elmore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>Setting a vision and context for creating coherence in organizations</td>
<td>Creating a vision</td>
<td>Focus on system-wide improvement</td>
</tr>
<tr>
<td>Purpose</td>
<td>Attending to a broader moral purpose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Establishing a sense of urgency</td>
<td>Instructional change is a long, multi-stage process</td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td>Cultivating relationships</td>
<td>Forming a powerful guiding coalition</td>
<td>Mobilizing people in the Service of Instructional Improvement</td>
</tr>
<tr>
<td>General Process</td>
<td>Keeping on top of the change process</td>
<td>Communicating the vision</td>
<td>Set clear expectations, then decentralize</td>
</tr>
<tr>
<td>Sharing knowledge</td>
<td>Planning for and creating short-term wins</td>
<td>Shared expertise is the driver of instructional change</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Empowering others to act on the vision</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consolidating improvements and producing still more change</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Institutionalizing new approaches</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Kotter (1996) emphasizes that there are fundamental things that run across all sectors, including schools, in terms of challenges and solutions. Establishing relationships, creating a vision, sharing knowledge, consolidating improvements, and producing still more change are common ideas across the three models. Fullan and Elmore offer corresponding views. Elmore and Leithwood and Aiken’s ideas rest on the assumption that educator practice can improve.

Snapshots of knowledge management practices and measuring instruction in school districts and schools should offer models for education leaders to examine their instructional practices. These models can capture where educators are minding the gap and where they may be closing a gap. The extent of discussion by education leaders about examining and improving instructional practices offer an insight into their change management regimes.

**Instruments for Change**

Reform, barriers to change, change management, innovation, and knowledge management concepts frequently overlap in the literature. Organizations’ knowledge management practices can reflect their desire to increase the productivity of knowledge workers by breaking down some of the barriers to knowledge sharing. Knowledge management practices fit naturally in the organizational change discourse. The literature often identifies barriers that prevent the knowledge management from becoming a reality. Fullan (2003, 3) contends that “...cultural barriers cause teachers to resist interacting with each other in new ways.” Elmore (2000, 7) argues that:

Administration in education...has come to mean not the management of instruction but the management of the structures and processes around instruction. That which cannot be directly managed must, in this view, be protected from external scrutiny. Buffering consists of creating structures and procedures around the technical core of teaching that, at the same time, (1) protect teachers from outside intrusions in their highly uncertain and murky work, and (2) create the appearance of rational management of the technical core, so as to allay the uncertainties of the public about the actual quality or legitimacy of what is happening in the technical core. ...Teachers, working in isolated classrooms, under highly uncertain conditions, manage the technical core. This division of labour has been amazingly constant over the past century.
Elmore's contention that the education system buffers teachers from outside disturbance may explain in part the state of knowledge management practices in education. Fullan (2001, 104), I believe, illustrates these conditions when he contends that “(m)ost schools are not good at knowledge sharing within their own walls, let alone across schools in the same district. When people ask, the sharing problem becomes moot.” This normative education system milieu sets the environment in which barriers to change flourish.

The literature on working knowledge management practices offers an insight into these buffered systems. Davenport and Prusak (1998) identify eight barriers: lack of trust; different cultures, vocabularies, and frames of reference; lack of time and meeting places; status and rewards going to knowledge owners; lack of absorptive capacity in recipients; belief that knowledge is the prerogative of particular groups; the “not-invented-here” syndrome; and intolerance for mistakes or need for help. Watkins and Marsick (1993) identify barriers such as the inability to recognize and change existing mental models, learned helplessness, tunnel vision, truncated learning (incomplete transfer of past learning), individualism, and a culture of disrespect and fear.

These descriptions of buffering and barriers speak to the challenges for systematic and systemic change. Abridged learning, learned helplessness, and tunnel vision are not a state of affairs that can enable educators to learn from one another and work together in systematic ways. Changes in decision-making structure and culture appear to be required to nurture effective (knowledge) management practices. The answer in part to acting on these barriers is the locality of change management. Elmore (1997) argues that the district role in professional development for teachers and administrators is at the center of educational reform and instructional improvement. His change model emphasizes mobilizing people in the service of instructional improvement; setting clear expectations, then decentralizing; multi-stage processes; focus on
system-wide improvement; and shared expertise is the driver of instructional change. Clearly, systemic and systematic constructing and sharing of knowledge is central to effective quality teaching and learning. Hargreaves (2003a) argues that transformation in education can occur through regimented processes of innovation within the education system, and with infrastructures capable of transferring ideas, knowledge, and new practices laterally across it. The Ministry of Education and North Vancouver’s knowledge management practices are discussed in detailed in Chapters 6 and 7.

The change management literature is also setting out strategies that entail a journey that an organization can take. David Parlby’s model (Evan, 2003, 20-21) describes five stages in an organization’s knowledge management (KM) passage (Table 3).
Table 3: Parlby Knowledge Management (KM) Stages Model

<table>
<thead>
<tr>
<th>Stage</th>
<th>Name</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Knowledge-chaotic</td>
<td>Unaware of concept&lt;br&gt;No information processing&lt;br&gt;No information sharing</td>
</tr>
<tr>
<td>2.</td>
<td>Knowledge-aware</td>
<td>Awareness of KM need&lt;br&gt;Some KM processes&lt;br&gt;Technology in place&lt;br&gt;Sharing information an issue</td>
</tr>
<tr>
<td>3.</td>
<td>Knowledge-enabled</td>
<td>Benefits of KM clear&lt;br&gt;Standards adopted&lt;br&gt;Issues relate to technology and culture</td>
</tr>
<tr>
<td>4.</td>
<td>Knowledge-managed</td>
<td>Integrated frameworks&lt;br&gt;Benefits case realised&lt;br&gt;Issues in previous stages overcome</td>
</tr>
<tr>
<td>5.</td>
<td>Knowledge-centric</td>
<td>KM part of mission&lt;br&gt;Knowledge-value recognized in market capitalism&lt;br&gt;KM integrated into culture.</td>
</tr>
</tbody>
</table>

Parlby’s model describes the journey an organization could take to implement a knowledge management system. The five-stage model provides useful markers for examining where a school district may be on a knowledge management journey. The model also allows any school district leader to assess the position of knowledge management of their organization and where they stand in relation to organizational change.

This chapter has presented a selection of literature related to knowledge management and educators’ observations about knowledge. I looked in particular at treatments of knowledge, knowledge types, and knowledge management typologies. Black and Wiliam’s (1998) systems metaphor of a black box was introduced as a device for discussing education, knowledge management, and public policy. Elmore’s (1997) argument that the knowledge of and focus on teacher pedagogy as the central and critical factor for helping students succeed is also an important construct for this case study. Davenport and Prusak’s (1998) proposition that
knowledge is essential for an organization to organize itself and function, sets the stage for this case study. The literature presents a range of current thinking about knowledge management as both theoretical and practical constructs. An important part of the economic-oriented literature underlines the role of knowledge and innovation for improving organizations’ outcomes. Lundvall’s taxonomy of knowledge is drawn from this school of economics. Overall, for many of the authors, knowledge is seen as a necessity for institutions to organize themselves. The distinction of tacit and explicit knowledge (Dixon (2000), Polanyi (1967), Nonaka & Takeuchi (1995), von Krogh, Ichijo & Nonaka (2000), Fenstermacher (1994), Fullan, 2000) and the social construction of knowledge are drawn in as key concepts in understanding and interpreting ideas about knowledge management in education.

From this literature, several models are also introduced for this case study: the Knowledge Type Model (Lundvall, 1998); the Change Management Model; and the Knowledge Management Progression Model. The Knowledge Type model frames the distinction between different kinds of knowledge. Lundvall’s model is useful in identifying these practices. It is also beneficial when one needs to consider that knowledge management practices in education include stories about inputs, outputs, and a focus on the processes that lead to learning in the classroom. Leithwood and Aiken’s (1993) instructional monitoring model associates instructional services with variables and measures. The Fullan (2001), Elmore (1997) and Kotter (1996) Change Management Models identifies challenges and solutions, and Parlby’s Knowledge Management Stages Model provides reference points for self-examination of an organization’s knowledge management development.

This literature review looked primarily to economic arguments. Whether practical or hypothetical, knowledge is considered by these authors to be a central factor of an organization’s success. The importance of knowledge and expertise for achievement, whether in terms of individual success, administrative productivity, or an enterprise’s earnings, is a common theme
found in this literature. I believe that in order for school district leaders and organizations to change and innovate, they need to draw from stories found in the economic and innovation literature. Working knowledge management and educators’ capacity to learn together and create processes for modifying instructional practices are critical for improving student achievement. In this literature, innovative capacity is a key concept. I believe working knowledge management models can facilitate and nurture school district innovation processes. Working knowledge management coupled with a sufficient degree of high-standard research activities provides the basic prerequisites for the desired improvement in student achievement.

New ideas about the school district’s role as a knowledge organization are only just emerging. I believe this literature together frames for school district leaders the centrality of instruction, change management, and organizations’ knowledge management evolution in shaping and assisting educators in feeling at home in the knowledge society; in recognizing that their ideas and practice can be made visible and are improvable; in fostering a culture of collaboration and interaction within and across schools or among teachers; and in systematically managing their working knowledge. A discussion about the models referenced above will be set out in the last chapter of this study as a tool for school district leaders to assess the state of working knowledge management in their school districts and schools.
Chapter 3  Case Study Methodology

A case study is a systematic way of looking at what is happening, collecting data, analyzing information, and reporting the results. According to Bogdan and Biklen (1992, ix), educational researchers are positively disposed to the changes that have occurred in research strategies, and many have incorporated the qualitative approach in their research. The aim of this case study research is to explore “knowledge work” *in situ* in order to develop a grounded understanding of what knowledge management practices and what knowledge management work is like in a school district with respect to the improvement of teaching and learning.

Case studies are used in a variety of research enquiries. They have been categorized as exploratory, explanatory, and descriptive (Yin, 1993); or instrumental, and collective (Stake, 1995). Yin (1994, 13) defines a case study as, "An empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.” I have adopted Benbasat’s (1987) model for this case study. Benbasat et al (1987, 371) put forward eleven key characteristics of case studies. Table 4 describes these characteristics. I will illustrate later how this study fits with Benbasat’s (1987) typology.
### Table 4: Key Case Study Characteristics

<table>
<thead>
<tr>
<th>Key Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phenomenon is examined in a natural setting</td>
</tr>
<tr>
<td>2. Data are collected by multiple means</td>
</tr>
<tr>
<td>3. One or few entities (person, group, or organization) are examined</td>
</tr>
<tr>
<td>4. The complexity of the unit is studied intensively</td>
</tr>
<tr>
<td>5. Case studies more suitable for exploration, classification, and hypothesis development stages of the knowledge building process</td>
</tr>
<tr>
<td>6. No experimental controls or manipulation are involved</td>
</tr>
<tr>
<td>7. The investigator may not specify the set of independent and dependent variables in advance</td>
</tr>
<tr>
<td>8. The results derived depend heavily on the integrative powers of the investigator</td>
</tr>
<tr>
<td>9. Changes in data collection methods could take place as the investigator develops new hypotheses</td>
</tr>
<tr>
<td>10. Case research is useful in the study of “why” and “how” questions because these deal with operational links</td>
</tr>
<tr>
<td>11. The focus is on contemporary events</td>
</tr>
</tbody>
</table>

Benbasat (1987) also proposes three reasons why a case study approach is suitable for information systems research strategy, all of which were appropriate to this study: 1) the researcher can study the information system in a natural setting; 2) the researcher can answer “how” and “why” questions; and 3) it is suitable for studies in which little formal research has been conducted previously.

Mixed method design combining quantitative and qualitative techniques were adapted for this case study following Greene, Caracelli, and Graham (1989). They describe mixed-method designs “as those that include at least one quantitative method (designed to collect numbers) and
one qualitative method (designed to collect words), where neither type of method is inherently linked to any particular inquiry paradigm" (1989, 256).

As shown in Table 5, quantitative and qualitative measures are characterized by different techniques for data collection.

**Table 5: Data Collection Techniques**

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveys</td>
<td>Observations</td>
</tr>
<tr>
<td>Tests</td>
<td>Interviews</td>
</tr>
<tr>
<td>Existing databases</td>
<td>Focus groups</td>
</tr>
</tbody>
</table>

Because this case study addresses school district leaders’ understanding and experience of a particular phenomenon in their world, for the first part of this study, it was appropriate to use a qualitative case study approach. This was done, seeking depth of understanding of how these educators understood knowledge management practices in the school district.

A mixed-method approach is not without its critics. Some posit that different ontological and epistemological assumptions that inform different methods must remain distinct so that the “synergistic” attributes of a particular paradigm are not upset (Lincoln & Guba, 1984). Reichardt and Cook (1979) argue pragmatically that design decisions should be driven by the practical demands of the research problem. The approach taken up here is in line with that of Miles and Huberman (1984) who propose that “epistemological purity” does not always move forward the completion of research.

The purpose of this study corresponds with the developmental purpose of the mixed-method research to seek convergence, corroboration, and correspondence of results from the different research strategies identified. Greene, Caracelli, and Graham (1989, 259) have developed a mixed-method design that “seeks to use the results from one method to help develop or inform the other method.” The rationale of such a design is to increase the validity of
theoretical constructs and the results of an inquiry by capitalizing on the inherent strength of
each method employed. In this study, as discussed above, the use of case study methodology
serves to further understanding of the school district leadership community through the
exploration of their understanding of knowledge management.

The secondary purposes for employing a mixed-method design include complementarity,
initiation and expansion: *Complementarity* – seeks elaboration, enhancement, illustration,
clarification of the results from one method with the results of the other method; *Initiation* –
seeks the discovery of paradox and contradiction, new perspectives of frameworks, the recasting
of questions or results from one method with questions or results from the other method; and
*Expansion* – seeks to extend the breadth and range of inquiry by using different methods for
different inquiry components (Greene, Caracelli, & Graham, 1987, 259).

Denzin (1978) identifies four types of research triangulation: data, investigator, theory,
and methodological. I have used more than one research method and data collection technique:
interviews, document analysis, and a survey to explore different dimension of educational
practice. Each data type was analyzed separately. I have used triangulation in this case study so
that the various sources provide additional data and information in ways that complement each
other.

An illustrative chart of the study is presented later in the chapter in Figure 5. The phase of
the project during which each of the above purposes come into play is shown on the time-line
scale. Significant features of a developmental mixed-method research design include the
sequential implementation of the different methods for the purpose of exploring a single
phenomenon. As shown in the diagram, the study was undertaken in five phases, beginning with
the conceptualization of the problem and ending with the integration and interpretation of
qualitative and quantitative results and suggestions for further research.
As is often the case with qualitative research, the case study design was fine-tuned throughout the process of data collection and analysis. Specific changes include the introduction of a focus group with interviewees in order to map their concept of the district’s knowledge management cycle. Much can be learned by beginning one’s enquiry by focusing on the actors involved and developing an understanding of their world from their perspective. Models of school districts can thus be grounded in the day-to-day realities of educational leaders’ practice and thereby avoid the difficulties associated with imposing rather than discovering meaning (McKeown, MacDonell, & Bowman, 1993). Nonetheless, school districts are sizeable institutions and have an impact on the lives of tens of thousands of students at any given time. For this reason, it is important that the findings of one’s inquiry be extended beyond the confines of a small group of educational leaders – although it is not being suggested that findings can or should be extended to all school district’s leadership. In summary, the aim of this study was to explore the meaning of knowledge management practices in the school and school district environs.
Applied Methodology

As discussed earlier in the chapter this case study has the following characteristics based on Benbasat's (1987) typology (Table 6).

Table 6: Case Study Application

<table>
<thead>
<tr>
<th>Benbasat’s Typology</th>
<th>NVSD Case Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenomenon is examined in a natural setting.</td>
<td>Observation and interview with educational leaders in their work place.</td>
</tr>
<tr>
<td>Data are collected by multiple means.</td>
<td>Data collected by interviews, observation; document review and questionnaire.</td>
</tr>
<tr>
<td>One or few entities (person, group, or organization) are examined.</td>
<td>Research concerned itself with the knowledge management practices of educational leaders and the district and its schools.</td>
</tr>
<tr>
<td>The complexity of the unit is studied intensively.</td>
<td>The focus was on the relationship between leadership and knowledge management practices as a tool. The school and district plans were examined in detail.</td>
</tr>
<tr>
<td>Case studies more suitable for exploration, classification and hypothesis development stages of the knowledge building process.</td>
<td>A hypothesis being explored is that understanding one’s knowledge management practices can assist educational leaders in setting priorities.</td>
</tr>
<tr>
<td>No experimental controls or manipulation are involved.</td>
<td>No experimental controls or manipulations were involved.</td>
</tr>
<tr>
<td>The investigator may not specify the set of independent and dependent variables in advance.</td>
<td>Independent or dependent variables were not identified in advance.</td>
</tr>
<tr>
<td>The results derived depend heavily on the integrative powers of the investigator.</td>
<td>The results from the study were drawn from interviews, observations; document review and questionnaire.</td>
</tr>
<tr>
<td>Changes data collection methods could take place as the investigator develops new hypotheses.</td>
<td>Document review and analysis became a more important data collection method as the study proceeded.</td>
</tr>
<tr>
<td>Case research is useful in the study of “why” and “how” questions because these deal with operational links.</td>
<td>The study explored the character of knowledge management practices and how and why they develop.</td>
</tr>
<tr>
<td>The focus is on contemporary events.</td>
<td>Research area is contemporary and current, and expected to grow rapidly.</td>
</tr>
</tbody>
</table>

In implementing the case study methodology, maximizing reliability and validity was imperative (Miles & Huberman, 1984). I spent ample time with the case study's participants to test for
discrepancies in answers (i.e., prolonged engagement and persistent observation to enhance the reliability in this case study). I verified the accuracy of participants' responses (i.e., participant checking); and explored each interviewee's responses thoroughly (Lincoln & Guba, 1985).

The case study had five phases. Figure 1 describes the time line and activities in each phase. The mixed methods used in this case study include a knowledge management practices survey, building a database of the elements of the district and school plans and analyzing the data, interviewing the leadership team members and collecting and analyzing district and ministry documents. Phase I of this research involved reviewing the relevant literature and devising an analytical framework. In phase II, a series of interviews were conducted. The interviewees included: the superintendent; the two assistant superintendents, and seven members of the school district senior staff. Within the unstructured interviews, participants were asked to comment on their experience vis-à-vis instructional leadership development aspects of school reading and numeracy plans, the district and school planning process and the various knowledge management practices. To maximize validity, participants' responses were reported and represented. During this period, NVSD and MoE documents, including those related to school planning and knowledge management practices, were collected and analyzed. In phase III, the knowledge management practices survey was administered and a focus group was organized in the district. The survey and interview data were also analyzed. In phase IV, results were integrated and interpreted. I used the multiple sources of information to triangulate the data (Denzin, 1978, Miles & Huberman, 1984). The final phase involved follow-up research.
Figure 1: Case Study Time Line

<table>
<thead>
<tr>
<th>Phase I: Sept '02 - Dec '03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background literature</td>
</tr>
<tr>
<td>Conceptual/Analytical</td>
</tr>
<tr>
<td>Framework</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase II: Jan 03 to June 03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
</tr>
<tr>
<td>Follow-Up Contacts</td>
</tr>
<tr>
<td>Focus Grp.</td>
</tr>
<tr>
<td>Case Study Analysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase III: May 03 to June 03</th>
<th>June 03 to July 03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire Dev.</td>
<td></td>
</tr>
<tr>
<td>Survey Admin.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase IV: July 03 to Sept 03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results</td>
</tr>
<tr>
<td>Integration/Research</td>
</tr>
<tr>
<td>Interpretation</td>
</tr>
</tbody>
</table>

| Phase V: Further Research    |

Preparation | Conduct of Case Study | Conduct of Survey | Integration of Results | Dissemination & Recommendations |

39
Personal Journey

Johnson, Pugach, and Devlin (1990) argue that collaboration between educators is the most important issue in education today. At every turn my colleagues were supportive, informative and candid in support of the case study. I learned a great deal about strong educator professionalism and the loosely connected disposition of the education system. A case study requires a balance of skill, competence, and rigor with flexibility, insight and tacit knowledge (Lincoln & Guba, 1981). My work with the superintendent and his colleagues offered me the opportunity to challenge myself to ensure a balance between practice and research. As a participant observer I engaged in practical reflection in action. I reflected upon my practice and modified my work in the NVSD as it was happening.

The school district’s Chesterfield building in North Vancouver and its sister office the Leo Marshall Curriculum Centre look like temporary buildings constructed in the 1950s. However, the educators I met there are leaders for the 21st century. My travels with my colleagues started with a conversation in June 2000 at the Chesterfield district office with the then assistant superintendent Paul Killeen. As a result of my conversations with Mr. Killeen, I reviewed the district documents covering their administrative business process redesign of the administrative systems, accountability instruments, service delivery models, and information support systems available to the district. The district had developed the innovative idea of a service delivery model to organize change. I discuss service delivery models in Chapter 5. Subsequently, I put together an initial picture from district documents of a systems view of one part of their work (Figure 2).
Figure 2: Service Delivery Models September 2000

Accountability

Service Delivery Models

Required Areas of Study Delivery Models

Support Systems

School Act/Regulations
District Goals/Values

Consequences on School Act/Regulations

Student Outcomes

- Inclusive Education 44 (Special Education)
- ESL
- Reading 44 – Primary, Intermediate, Secondary
- K/1 Numeracy
- 7/8 Numeracy
- Web-in-the-Classroom
- Firm Foundations – Early Literacy
- Safe and Caring Schools
- Managing Violent Incidents
- School-based implementations
- Other

- Required Areas of Study
- Primary Learning Outcomes
- Graduation Requirements

- Management Information System
- SASI – School Admin.
  Including Report Cards
- Adminfo – John Taylor
I used the illustration of the service delivery models as a reference tool in the early conversations for my work in the district. I was trying to connect the dots from the various texts in the district’s documents I examined. The documentation was well written and strategic in character. The district’s strategic approach included an emphasis on teaching and learning. What was not referenced in the documents was any discussion of the systematic provision of direction and support for feedback between students and their teachers on new ways that could require significant changes in classroom practice. The district’s documentation mirror Elmore’s contention that educators are managing structures and processes around instruction but not instruction.

Paul Killeen brought my interest in working with the district to the superintendent’s attention. In October 2000, I talked with Robin Brayne about data and information and he smiled about my academic characterization of the issues. He told me clearly he was interested in the practical implications of this work. Brayne’s interest was in constructing an information resource to support the district in the creation of their first accountability contract. At that end of the meeting, he gave me a copy of John Kotter’s book *Leading Change*. Kotter’s (1996) book is Brayne’s bible on how to effect change. He and his colleagues in North Vancouver are good at managing change. At that same meeting he asked his colleague assistant superintendent Ann Tarves to join us. Over the next two years, I was fortunate to work with and learn from Ann about how school district leaders optimize the opportunities and minimize the challenges that the ministry, trustees, superintendent, principals and vice-principals, teachers, staff and community provide to work with schools to improve student achievement.

In late October 2000, I attended a public meeting at the Leo Marshall Curriculum Centre where a consultation was held on the district’s ideas about contents for an accountability contract. The initial framework document handed out that evening included a NVSD 2001 planning template (Figure 3).
The planning document covered proposed goals. For each goal the planning methodology required the articulation of objectives; strategies to achieve the objectives; and baseline, target and actual performance measures.

The discussion that evening focused around goals and strategies but not upon linkages or measures. The work to build this first accountability contract occurred over the next ten months. Initially, the NVSD was interested in examining the education information implications related to four curriculum and instruction priority projects for 2001-2002. In November 2000, I provided the exemplar planning framework in Figure 4 to the district leadership committee.
Figure 4: Exemplar Planning Framework

<table>
<thead>
<tr>
<th>Goal 1. To Improve reading proficiency in students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Reduce the number of students who are at risk for learning to read in kindergarten</td>
</tr>
</tbody>
</table>

|--------------------|-------------------|---------------------|----------------|-------------------------------------|---------|---------|

I suggested that the plan needed to look at actions and measures related to the students, parents, and teachers. I looked for explicit linkages to existing programs. I also suggested incorporating both outcomes data (an end result; a consequence) and outputs data (an amount produced or manufactured during a certain time). The reaction to the proposal was low key. I believe my colleagues saw this approach as perhaps too direct for their knowledge environment. The final product discussed later in this section captured many of these ideas inside the district’s original template without the specificity of the exemplar model (Figure 7).

The next step for me in this project was to work with senior staff leading the district’s projects for Reading (Cathy Molinsky), Mathematics (Audrey-Hobbs Johnson), Safe and Caring Schools (Tom Tupper), and Improving the School Success Rate of First Nations Students (Tom Tupper). I worked with my colleagues in November and December 2000 and collected documents about their work. The focus of the conversations was measurement issues underlying their projects to improve student achievement.

By December 2000 we agreed on an information work plan that involved documenting student level cohorts and Ministry and NVSD data inputs; writing a data dictionary; identifying the variables, labels and codes by dataset; requesting FSA data from the Ministry; acquiring data...
from NVSD; and creating and documenting a NVSD database. The following data sets were identified for the project:

- Reading Proficiency: Test of Phonological Awareness (TOPA) (Kindergarten), Foundation Skills Assessment (FSA) 2002 (Grades 4, 7, 10) and district reading assessment based on the Provincial Performance Standards (Grades 4 to 10).
- Mathematics Success Rates: Linda Siegel’s June 2001 Numeracy Battery, May 2000 (Kindergarten), FSA 2002/2003 (Grades 4, 7, 10), NVSD Grade 7 Math Assessment, and NVSD Grade 8 Math Assessment (June 2001 and June 2002).

A next step in the project involved mapping the data. An example of a data map constructed by Edudata is illustrated in Figure 5. This mapping was an essential step as the knowledge about the different measurement tools that were being used and specific knowledge about how the resulting data was being used was often not documented, nor widely known and sometimes was contested.
### SASI DATA
For North Vancouver's seven secondary schools (Argyle, Balmoral, Carson, Handsworth, Seycove, Sutherland, and Windsor):

- **ALL COURSE FILE: ACRS**
  - School-level Administrative / (‘02)

- **COURSE HISTORY – ACHS**
  - Student-level Administrative / (‘99->)

- **ALL STUDENT FILE – ASTU**
  - Student-level; Demographic / (‘99->)

- **GRADE AND ATTENDANCE FILE**
  - Student-level Administrative and Assessment / (‘99->)

### DISTRICT DATA SOURCES

- **DISTRICT MATH ASSESSMENT**
  - Grade 7 and Grade 8 Student-Level Assessment / (‘?)

- **OTHER SUBJECT AREAS**
  - Grade ? Student-Level Assessment / (‘?)

### PROVINCIAL DATA SOURCES

- **STUDENT LEVEL DATA COLLECTION (SLDC)**
  - Grades K-12, SU, SU, Demographic / (‘90->)

- **FOUNDATION SKILLS ASSESSMENT (FSA)**
  - Grade 4, Grade 7, Grade 10 Student-Level Assessment/ ’00, ‘01, 02’

- **Grade 4, Grade 7, Grade 10 Item-Level Assessment: NUE, NUF, REE, REF, WRE, WRF/ ’00, ‘01, 02’

- **School-Level/ District-Level Assessment: ’00, ’01, 02’

- **TRAX**
  - Grade 12 item-level, student-level provincially examinable courses, Assessment (‘95->)

- **Grade 11 and 12 student-level non-provincially examinable courses Assessment (‘95->)**

- **Snapshot files: graduation date and GPA Assessment (‘?-->)**

### OTHER POSSIBLE DATA SOURCES

- Master File on all schools including programs in the district
- Budget Information
- Administrative/Financial
- Teacher files Administrative
- Report Cards Assessment
- Activities Administrative
- Student family accounts
- Administrative/Financial
- Library Administrative
The research undertaken to construct the data map was a critical piece of work. The institutional knowledge about data in the district was dispersed (as was the physical data) and often in the heads of individual staff and always in different computers or paper documents. The data map provided a working tool to mobilize knowledge and decision making in the district. The process of documentation for the data map was significant in building capacity. The educators needed to get involved in a focused way to understand discuss and make choices about their key performance indicators.

I believe Edudata’s work gave the educators involved confidence that they had a shared understanding of their data. The next step in our work was the technical definitions of the measurement concepts they wanted to use for the key performance measures. The technical work involved documenting the available data and deciding how the baseline, target and actual district level measures would be defined. We worked with our colleagues on the technical details for each district goal. Figure 6 contains an excerpt from the technical notes from the NVSD Performance Agreement (Accountability Contract) for 2001/2002 that was discussed and constructed over a six-month period in 2000 and 2001.
**School District Goal 1: To Improve Reading Proficiency in Students**

Key Performance Measures 1.1 Reading readiness as Measured by Test of Phonological Awareness (TOPA);

- Measurement instrument: TOPA;
- Data source: NVSD TOPA data files as of Sept 23, 2002;
- Number of students participated: 1,199
- Method of calculations:

**Baseline January 2002** – Percentage of students who scored above the 25\(^{th}\) percentile

\[(1022/1199) = 85.2\%.

**Actual June 2002** – 71 of 86 students that were below the 25\(^{th}\) percentile in January and that were re-tested moved to above the 25\(^{th}\) percentile. Therefore, percentage of students above the 25\(^{th}\) percentile changed to \[((1022+71)/1199) = 91.2\%.

**Target**, which was to increase the percentage of students that scored above the 25\% percentile by at least 3\%, was met \((91.2\% - 85.2\% = 6\%\).

**Notes:**

- Seventy-one students out of the total 86 students being retested met reading readiness requirements.
- This has shown that the interventions have improved the reading readiness rate for Kindergarten students in the School District by 83%.
- Ninety-one students who scored below the 25\% percentile did not receive the TOPA retest in June.

The process leading to the drafting of the technical note led our NVSD colleagues to consider the adequacy and implications of their measurement activities and tools for tracking change. Much of the work on the measures had historically been undertaken on a project basis and had not been exposed to a broader conversation among the educational leaders. The resulting 2001-2002 plan reflected their first planning year lessons learned. The district’s plan covered information and measures in a comprehensive way (Figure 7).
<table>
<thead>
<tr>
<th>Goals</th>
<th>Strategies</th>
<th>Measures</th>
</tr>
</thead>
</table>
| **1.1** Increase the percentage of students who meet the expectations for reading readiness in kindergarten | - Implement the program: *Firm Foundations: Early Literacy Teaching and Learning*  
- Resource each kindergarten class with program document and related classroom material  
- Inservice kindergarten and learning assistance teachers’ networks six times a year  
- Administer *Test of Phonemic Awareness (TOPA)* screen January 2002 to all kindergarten students  
- Use intervention program *Launch into Reading Success* for “at risk” kindergarten students identified on TOPA  
- Administer TOPA June 2002 to “at-risk” kindergarten students following intervention | **Baseline:**  
**January 2002:** Percent of kindergarten students who meet reading readiness requirements as defined by TOPA  
Reading readiness 85%  

**Target:**  
June 2002: Increase the percent of students who meet or exceed the January 2002 baseline by at least 3%  

**Actual:**  
**June 2002:** Percent of kindergarten students who meet reading readiness requirements as defined by TOPA  
Reading readiness 91 |
| **1.2** Improve the reading proficiency of students in Grades 1-10 | | **Baseline:**  
**May 2001 FSA Reading:** Percent of students meeting or exceeding expectations  
- Grade 4: 86%  
- Grade 7: 81%  
- Grade 10: 82%  
**Target:**  
**May 2002 FSA Reading:** Increase the percent of students who are meeting |
The technical and accountability policy work also led to conversations and an understanding of the limitations of the district’s education information practices. Data from a number of the district-wide assessments were collected and stored separately from the main district student information system. As a result, when one produced integrated individual student reports for individual students or schools, inconsistencies were found in some of the key fields, including the Provincial Education Numbers (PEN), which make data integration difficult and results subject to errors. At the same time individual schools have implemented the district student information system application differently and policies on the use of course codes, various fields in the database, and grade recording formats differed across schools and even within individual schools between years. These record keeping faults have meant that the district was unable to generate cohort reports using their data to track students’ progress during a school year and over school years.

The meetings and conversations on producing accountability contracts, technical reports, reporting practices led to conversations and reflection on how knowledge is managed in the district. At a focus group meeting in May 2003 on Knowledge Management a variety of ideas

<table>
<thead>
<tr>
<th><strong>Phonographix, Orton Gillingham, Reading Recovery</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Track reading results in “Meets and Exceeds Expectations” categories <strong>Foundation Skills Assessment (FSA)</strong></td>
</tr>
<tr>
<td>- Grade 4 FSA 2002: Reading</td>
</tr>
<tr>
<td>- Grade 7 FSA 2002: Reading</td>
</tr>
<tr>
<td>- Grade 10 FSA 2002: Reading</td>
</tr>
<tr>
<td><strong>or exceeding expectations in Grade 4, 7, and 10 as measured by FSA Reading by at least 2%</strong></td>
</tr>
<tr>
<td><strong>Actual:</strong></td>
</tr>
<tr>
<td><strong>May 2002 FSA Reading:</strong></td>
</tr>
<tr>
<td>Percent of students meeting or exceeding expectations</td>
</tr>
<tr>
<td>- Grade 4: 88%</td>
</tr>
<tr>
<td>- Grade 7: 83%</td>
</tr>
<tr>
<td>- Grade 10: 78%</td>
</tr>
</tbody>
</table>

---

4 The Personal Education Number (PEN), a unique identifier, allows the Ministry to track each student's assessment and exam results.
were proffered to develop a map of their understandings of knowledge management. One educator said, “I tried to marry the categories with the cycles that we were talking about educationally and overlay them meta-cognitively.” He posed the questions, “How do we know, in any area? How do we know the goals we implement are appropriate? How do we know that the data we selected is appropriate, how do we know an effective intervention, and how do we know we are being effective? That is hard to say...that is the higher order level which is beyond...basic....” A colleague joined in and said:

...we need some way of capturing the status of our knowledge with reference to whatever information we are looking at. The next part is how we know we are there, so we have to generate the data or get the data, or gather the data or whatever, so that we saw some evidence of this is where we are at. Then the next question is, where do we want to go, so that would come from knowledge-based goal setting, based on the knowledge that we have so far or thinking about where we would like to go next. Then, the question is what we need to know in order to get there. So that is when you have to look at what knowledge you need to acquire in the cycle. Then the next stage is we have acquired this knowledge, How are we actually going to get there and this is the procedural step, so...implementation stage. And then, how do we access our progress, so that we stop and reflect meta-cognitively on how this is working and how we are communicating where we are at, communicating our knowledge. Then next, how are we going to share our learning and that goes to T...’s point of how are we going to promote, disseminate, take this to other places in our district, our successes and our learning and then come back to assess where we are at....

Janey Cameron, a vice-principal at Monterey Elementary School, drew the following representation of their Knowledge Management Cycle (Figure 8).
The knowledge mapping session offered an ideal representation of how these educators envisioned practitioner research at the student, classroom, school, and district levels. Their discourse reflected Jarvis's (1999, 133-134) belief that “...professional’s way of knowing is a dialectical movement from action to reflection, in a continuing loop. It is a process of knowing, and what the practitioners have learned is their own knowledge.” The focus group meeting captured for me their ability to reflect on where one could go with a knowledge management capacity.

Over three years, I have had the opportunity to work on three accountability contracts, one school planning cycle, and on a district data warehouse. For each project, I saw educators...
working diligently to gather information for conversations with their district executive committee, trustees, school planning councils, principals, and teachers. The different cultures of elementary and secondary school shaped their visions of what was possible. These accountability activities, coupled with the information practices they face and the ministry’s public promotion of Foundation Skills Assessment information, reinforced the districts reliance on standard school level reports produced by the Ministry of Education. Over time, many educators came to the view that cohort tracking and analysis of student progress was a necessity.

The district subsequently has begun working on establishing record keeping policies and practices that will add to their ability to undertake student cohort analysis. The district’s 2002-2003 Strategic Directions Framework recognized the information issues they face. The plan (NVSD, 2003, 3) now identifies as a strategic trend the “(i)ncreasing demands upon the information/data gathering and data analysis capabilities of schools and school boards.” The plan also identifies as a priority for the first time (NVSD, 2003, 5) the need to “(p)rovide direction, support, and coordination for the ongoing implementation of student information systems including hardware upgrades, training for administrative and support staff and increased standardization.” The district is awaiting the ministry’s plans for a province-wide common student information system. Their future plans will likely be shaped by the Ministry of Education’s common student information system. Once again a provincial template may set the stage for school and district evidence-informed story telling. The work on this project continues to be an important part of my practice. I see progress and my travels with the district continue.

Applied Methodology

The applied qualitative research methods used in this case study involved the use of interviews, a Knowledge Management Practices Survey and document analysis.
Interviews

Qualitative interviews were used as both an exploratory step and were used after results of the survey and documents were analyzed to gain insight into interesting or unexpected findings. The superintendent, the two assistant superintendents, and five senior educators were interviewed. Throughout the case study period I also participated in several dozen conversations with these eight educators and a half dozen school educators in relation to my practice and the district’s planning process. I also attended 15 accountability planning meetings where the design, implementation, and review of the planning results were discussed.

Knowledge Management Practices Survey

The objective of the School District and School Knowledge Management Practices Survey was to better understand how senior school district professionals construct a sense of order around knowledge management. The survey is a replication of Statistics Canada’s 2001 pilot survey on Knowledge Management (Earl, 2002). That survey was part of an international initiative headed by the Organization for Economic Cooperation and Development. The original survey sampled firms in five sub-sectors of the North American Industrial Classification System (NAICS). The objective of the survey was to demonstrate that the use of knowledge management practices in firms could be identified. The Statistics Canada report – *Are We Managing Our Knowledge: Results from the Pilot Knowledge Management Practices Survey*, 2001 publishes the results of this survey. The original questionnaire was designed by the Science, Innovation and Electronic Information Division of Statistics Canada in collaboration with international associates.

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5 NAICS was developed jointly by the U.S., Canada, and Mexico to provide new comparability in statistics about business activity across North America.

6 The Centre for Educational Research and Innovation (Organisation for Economic Co-operation and Development); the Ministry of Trade and Industry and the Center for Ledelse (Denmark); the Fraunhofer Institute for Systems and Innovation Research (Germany); Service des études et des statistiques industrielles and Institutnational de la statistique et des études économiques (France); the Office of National Statistics (the United
Statistics Canada undertook cognitive testing of the questionnaire. Changes were made to the original questionnaire to reflect the different milieu that private sector organizations and public schools operate in. Table 7 sets out example of the changes made to reflect the different environments.

**Table 7: Survey Differences**

<table>
<thead>
<tr>
<th>Statistics Canada Survey</th>
<th>NVSD Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>To increase efficiency by using knowledge to improve production processes</td>
<td>To improve efficiency by using knowledge to improve teaching and learning processes</td>
</tr>
<tr>
<td>To promote sharing or transferring knowledge with clients or customers</td>
<td>To promote sharing or transfer of knowledge with teachers, students and parents</td>
</tr>
</tbody>
</table>

A detailed description of the changes or differences between the Statistics Canada and the North Vancouver Survey instrument is set out in Appendix B. The new North Vancouver Survey (Appendix C) was based on in-use/planned-use identification of a series of business practices related to knowledge management. These practices were organized as follows: policies and strategies; leadership; incentives; knowledge capture and acquisition; training and mentoring; and communications. Respondents who indicated that any practice listed in the first question was “In Use” (In Use Before 2001 or Used Since 2001) continued to the next section. Respondents not using any of the practices moved (skipped) to question 10 – “Incentives to Use”. Questions 3-9 captured the reasons, results, effectiveness and responsibility for using knowledge management practices. Also included in this section were questions on the sources of knowledge

Kingdom); Innovazione tecnologica e ricerca scientifica (Italy); Statistics Netherlands (The Netherlands); Statistics Sweden (Sweden); and the Institute for Knowledge Management (United States of America).
management practices, spending dedicated to knowledge management and resistance to using knowledge management practices.

**Administrative Position Description Analysis**

An analysis of NVSD position descriptions was also undertaken. The position descriptions for the Superintendent of Schools, Assistant Superintendents, Principals, Vice- Principals, and District Principal – Program Services (Appendix D) were examined in relation to Elmore (1997) Fullan (2001) and Kotter (1996) models for successful change (Table 2).

**District and School Plans Analysis**

The analyses of the North Vancouver school plans submitted for 2003/04 involved constructing a database and relating these plans to grounded categories of knowledge management practices. Melding the OECD knowledge typology with the four part typology of knowledge of Lundvall and Johnson (1994) and Lundvall’s subsequent descriptions (1999) provides an Organization Knowledge Profile to encapsulate a picture of knowledge management practices in school districts and schools. Table 8 illustrates a schema of School and School District Organization Knowledge.

**Table 8: Organization Knowledge Profile**

<table>
<thead>
<tr>
<th>Knowledge Purpose</th>
<th>‘Know Why’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Acquisition</td>
<td>‘Know What’</td>
</tr>
<tr>
<td>Knowledge Utilization</td>
<td>‘Know How’</td>
</tr>
<tr>
<td>Knowledge Capital</td>
<td>‘Know Who’</td>
</tr>
</tbody>
</table>

**Knowledge purpose or ‘Know Why’** conveys what causalities are at the core of the dominant models applied. For example a view of learning could have at its core ideas such as: intellectual
abilities are socially and culturally developed; students construct knowledge and understandings within a social context; learning is fashioned by earlier knowledge and cultural points of view; and reflection involves "metacognition".

Knowledge acquisition or 'Know What' relates to what facts are crucial when it comes to trigger search for new solutions? For example, what models of assessment psychometric, constructivist, or assessment for learning are used in the classroom/school/district?

Knowledge Utilization or 'Know How' refers to skills, i.e. the capability to do something. Assessment literacy allows teachers to use their judgment, standard tests and examinations about children's understanding to inform their teaching process and to determine what to do for individual children.

Knowledge capital or 'Know Who' involves information about who knows what and who knows what to do. "It also involves the social ability to cooperate and communicate with different kinds of people and experts (OECD, 2000, 15). Groups of teachers with common interests meet from time to time. Organizationally the school district has zone meetings and principal meetings. In designing new service models the district puts in place committees and work groups.

The knowledge utilization typology was further developed at the focus group discussion with district educators. The session was organized so the educators involved in the school leadership team could discuss the larger subject of how they envisioned knowledge management activity in light of their work on district and school planning. That discussion coalesced around the focus group’s mental map of knowledge management reflecting the collection, implementation, dissemination, and sharing of knowledge. The knowledge utilization was grouped into four types: capture, implementation, dissemination, and sharing (Table 9).
Table 9: Knowledge Utilization ('Know How') Types

<table>
<thead>
<tr>
<th>Types</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture</td>
<td>Activities to build and enhance the knowledge information about students and school performance.</td>
</tr>
<tr>
<td>Implementation</td>
<td>Activities designed and put in place for reaching district and school objectives.</td>
</tr>
<tr>
<td>Dissemination</td>
<td>Activities to distribute non-instructional information to promote school activities, to facilitate access to resources, and to reinforce conduct rules.</td>
</tr>
<tr>
<td>Sharing</td>
<td>Activities include in-service training, meetings, consultation, review and development, professional support.</td>
</tr>
</tbody>
</table>

Rather than develop a schema about knowledge management practices, which are then used normatively, this case study approach has been to develop grounded categories of knowledge management practices that can be used for descriptive purposes. Knowledge management practices in this study are used as generic factors that can facilitate change. Organizations may enhance their activities by improving what they already do well. The ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ typology provide an umbrella schema to organize knowledge management practices in school districts.

The North Vancouver school plans database contains all the details of goals, objectives, strategies and measures as stated in the 41 school plans. The term ‘strategies’ in the BC education system refer to district and school’s improvement plans. These plans contained a total of 371 objectives, 507 measures and 1,856 strategies relating to 148 goals across all the 41 schools. To assist analysis and interpretation, each strategy statement is characterized by one of the 24 “categories” and by one of the four ‘Know How’ types. Similarly, each measure statement was coded with one of the 16 measurement types. The database structure repeats the hierarchical linkage between schools and their schools plans and goals, along with the objectives, strategies and measures associated with the goals. For reference and further comparisons, the database also
contained details on goals, objectives and strategies stated at the district level. District strategy statements are also described in terms of “categories” and ‘Know How’ types, which constitute a structural framework of analysis from both an applied and a theoretical perspective.

The database was designed to replicate the school plan template set out by the District (Appendix E). Each school plan sets out a number of goals, typically in the lines of literacy, numeracy, aboriginal students, and safe and caring schools. Under each goal, there were a number of objectives, each associated with one or more strategies and measures. In relational database terms, there were five entities, or tables: school, school goals, objectives, strategies, and measures. These tables and their main elements are related to each other as illustrated in Figure 9. This structure allows one to examine strategies and measures by types of goals (literacy, numeracy, etc.) and types of schools (elementary or secondary).

**Figure 9: Database Structure**

Data modeling of the strategies were represented in two different ways that correspond to an applied (practical) and a theoretical (conceptual) approach. Each statement was coded with one of the strategy categories (Table 10).
<table>
<thead>
<tr>
<th>Strategy Category</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional intervention, support, and resources for target students /differentiated instruction</td>
<td>Identifying and developing and implementing strategies for target student groups</td>
</tr>
<tr>
<td>Attendance</td>
<td>Monitoring and improving student attendance</td>
</tr>
<tr>
<td>Communication through web site, newsletter, assemblies, etc.</td>
<td>School-level communication events or activities to raise awareness, promote and recognize behaviour, and disseminate information.</td>
</tr>
<tr>
<td>Community projects/involvement</td>
<td>Projects/activities involving community people coming into the schools, or students going into the communities</td>
</tr>
<tr>
<td>District specialist support</td>
<td>Strategies that call for district specialist support</td>
</tr>
<tr>
<td>Firm Foundations</td>
<td>The use of the strategies and guidelines laid out in the Firm Foundations</td>
</tr>
<tr>
<td>In-service teacher training/Other forms of training</td>
<td>Teacher/staff formal or informal training</td>
</tr>
<tr>
<td>Learning Assistance (LA)</td>
<td>Strategies involve the use of LA. Strategies are grouped under this category even when multiple location (classroom, LAC, LSC, etc) are mentioned.</td>
</tr>
<tr>
<td>Math 44</td>
<td>The district Math 44 program. In-service training on Math 44 will also be included in this category.</td>
</tr>
<tr>
<td>Math 44 – use of manipulatives</td>
<td>Use of manipulatives (a component of Math 44)</td>
</tr>
<tr>
<td>Parental Involvement/Parent seminars/home programs</td>
<td>Involving parents in providing home support for their children</td>
</tr>
<tr>
<td>Peer counselling/tutoring/mentoring programs</td>
<td>Peer counselling, tutoring, and mentoring programs</td>
</tr>
<tr>
<td>Performance Standards</td>
<td>The use and assessment based on BC Ministry of Education’s Performance Standards</td>
</tr>
</tbody>
</table>

This strategy classification allowed the school strategies to be organized by similar types of processes. Strategies were also coded by one of the four ‘Know How’ types to facilitate the analysis of strategies from a procedural perspective (See Table 11).
Table 11: ‘Know How’ Type Definition

<table>
<thead>
<tr>
<th>‘Know How’ Type</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture</td>
<td>Capturing strategies include students' testing, survey administration, data collection and analysis, tracking and using records. It also involves program evaluation and reporting. This category refers to all activities meant to build and enhance the knowledge information about students and school performance.</td>
</tr>
<tr>
<td>Implementation</td>
<td>Implementation strategies include district-based and school-based programs that are established and used in schools, and activities that are designed and put in place for reaching district and school objectives.</td>
</tr>
<tr>
<td>Dissemination</td>
<td>Dissemination strategies include events that happen at the boundary school-community, school-parents, and teachers-parents. It also includes modalities to distribute to students information other than instructional, to promote school activities, to facilitate access to resources, and to reinforce conduct rules.</td>
</tr>
<tr>
<td>Sharing</td>
<td>Sharing strategies include activities that take place within the community of educators, at the Ministry, district or school level and are meant to enhance the communication and sharing of information. It includes in-service training, meetings, consultation, review and development, professional support.</td>
</tr>
</tbody>
</table>

There were a total of 500 measure statements associated with 371 objectives. Similar to the data modeling on strategies, measures were also standardized for further analysis (Table 12).
Measures were standardized through a measure coding table to eliminate the inconsistencies with which measures are labelled among different schools. Measures were entered based on the objectives they were associated with. For example, if, within a single objective such as Foundation Skills Assessment (FSA), the same measure was mentioned more than once, such as FSA used for both baseline and target for Grade 4 and 7 students, it was entered in the database only as a single entry. However, if a measure was associated with multiple objectives in a school plan, it was entered as many times as it shows up in different objectives.

This case study mixed methodology include a knowledge management practices survey, building a database of the elements of the district and school plans and analyzing the data, interviewing the leadership team members and collecting and analyzing district and ministry documents. It involved triangulation so that the various sources provided additional data and information in ways that complemented each other. The research challenged me as a participant
observer to make sure I sought equilibrium between my practice and my research, and my beliefs about schooling.

Practitioner Research

I was a practitioner-researcher in this case study. Jarvis (1999, 60) posits that “it is only through being involved with the practice, speaking the same language and understanding the situation, that it is possible to understand the complexities of every unique performance.” My understanding and experience built up through my practice with education information and data programs and policy informed my use of qualitative case study techniques (Merriam, 1998; Stake, 2000; Yin, 1984) for collecting, analyzing, and interpreting the data. My practice in the NVSD was interesting and challenging. I continuously focused on establishing a balance between my work and my research. I was conscious throughout my research that this case study’s methodology needed to be implemented in a systematic way. I examined what was occurring at the provincial, district and school levels. I collected data, analyzing the information, and I am reporting the results. Benbasat’s methodology (Table 6) was an important reference for organizing the steps undertaken in the case study.

In the first stage and on an ongoing basis throughout the case study I reviewed a variety of district documents covering many aspects of the district’s work. The implementation of the district’s information work plan generated documentation about district and ministry data that provided insights for the case study into both entities’ knowledge management practices. The data mapping activity was an essential step as it provided knowledge about the different measurement tools being used and specific knowledge about how the resulting data was being used but frequently not documented, not widely known, and sometimes contested among the educational leaders in the district. The technical and accountability work in this case study
provided information about the strengths and limitations of the district and province’s knowledge management practices.

The knowledge mapping focus group provided an interesting opportunity to monitor these school district leaders’ ideas on how they wished to manage at the student, classroom, school and district. The School District and School Knowledge Management Practices Survey filled in part of a story on how eleven senior school district professionals described their views about the districts knowledge management practices. The analysis of the NVSD position descriptions offered additional insight into how their formal organizational profile fit with models for successful change management. The schema of ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ was used in examining the North Vancouver school plans submitted for 2003/04 plans.

Overall, the work in the district and on the case study allowed me the exciting opportunity to observe the bricolage of tacit and explicit knowledge that talented and committed educator leaders work with to engage in conversations with their district executive committee, trustees, school planning councils, principals, and teachers. It also led me to begin to think about the topography of knowledge richness and poverty that we face in the education system.
Provincial education systems operate in a knowledge society. Paradoxically, the British Columbia education system is managed and organized around a classroom-based industrial union model. Senge (2000, 45-46) argues that industrial-age schools systems are organized based on fragmented specialization. He (2000, 46) contends that “the fragmentation of knowledge is antithetical to a systems view of reality, that reality is composed fundamentally of relationships not things.” At the same time, according to the OECD (2003, 4), senior educational leaders “… usually have access to relevant evidence, those who deliver educational services at school often do not, or face obstacles in translating such knowledge into effective teaching practices.”

The industrial model is enshrined in British Columbia’s labour legislation; School Act; the Statement of Education Policy Order; and funding formula. These policies I believe are the keystones to shaping teaching and learning policy and practice in the school system. There are over 30 provincial laws and specific regulations that govern the education system’s workplace (classrooms, schools, and school districts) in British Columbia. The province is the de facto employer in the education system, not the school board. For example, in 2002 the government passed legislation to impose terms and conditions of employment on teachers and remove all class-size, staffing, and workload provisions from the provincial and local agreements. The legislation removed articles negotiated in local bargaining since 1987 and, in some cases, provisions obtained long before. New sections of the School Act prevented future negotiations on class size and composition, staffing, and workload. Wright (2003, 20) states that “the main reason the history of teacher collective bargaining has been so unhappy in this province (British Columbia) is that the structure of that bargaining has consistently lagged behind the evolution of the accountability for financing of the sector.” The ministry’s dominant concept of accountability appears to be that school boards and schools manage education effectively, monitor student achievement, and ensure accountability. Webster's Revised Unabridged Dictionary defines
accountability as "The state of being accountable; liability to be called on to render an account; accountableness." The obligation to answer for their actions at the school district and school level is also directly connected to the collective agreements put in place by the legislature and the financing of the sector by the provincial government. There is not at present an alignment of responsibility, accountability, and authority in the school system.

The Statement of Education Policy Order (OIC 1280/89) contains the mandate statement for education in the province outlining the duties, rights, and responsibilities of students, parents, teachers, school principals, district officials, and school boards. The mandate statement describes the prime goal of public schools as intellectual development and portrays human and social and career development goals as being shared among schools, the family, and community. The intellectual development goal focuses on the development of the ability of students to analyze critically, reason and think independently, and acquire basic learning skills and bodies of knowledge; to develop in students a lifelong appreciation of learning, a curiosity about the world around them, and a capacity for creative thought and expression. The human and social development goals speak to the development of a sense of self-worth and personal initiative; to develop an appreciation of the fine arts and an understanding of cultural heritage; to develop an understanding of the importance of physical health and well being; to develop a sense of social responsibility, and a tolerance and respect for the ideas and beliefs of others. The career development goal speaks to the preparation of students to attain their career and occupational objectives; to assist in the development of effective work habits and the flexibility to deal with change in the workplace.

The statement of policy also refers to the right and duties of teachers, principals, and district officials to exercise professional judgment. Teachers are expected to ensure that each student is provided with quality instruction, to participate in all normal school activities, and to monitor the behaviour and progress of each learner in accordance with provincial and local
policies. They are also expected to assist in the provision of programs to promote students' intellectual development, human and social development, and career development. Teachers are expected to evaluate students' intellectual development, human and social development, and career development and evaluate educational programs for their students. Teachers also have a responsibility to communicate with students and parents, and are accountable to the school board and its educational administrators. It is interesting to note that these duties do not include any reference to communities of practice, sharing of information, or other collegial activities.

Tomkins (1986, 425) noted that “(a)s ministries expanded their policy and planning functions, they devolved their inspectoral and supervisory function to the local level.” Gaskell (1995, 203) describes the existing school model of leadership as a world:

...where the administration supports teacher’s professional autonomy, where teachers are encouraged to be responsible to their own code of ethics and their own sense of students’ welfare is the professional ideal. But schools are always, to some extent bureaucratic organizations responsible to boards, ministries, and parents. As a result, the ideal of the autonomous teacher must be balanced with recognition of the legitimate power of the administration.

The British Columbia Teachers’ Federation (BCTF, 2003) offers a trade union and professional perspective where teachers utilize their education, training, and experience to make their own decisions about how they practise and how they interact with students. The 1989 assembly of the BCTF articulated principles for the implementation of change in education policies and practices. These principles include:

1. Centrality of Teaching—The implementation recognizes teachers as the key agents of educational change. The plan respects teachers as self-directed professionals committed to improving education policies and practices.
2. Clarity—Before the implementation begins, teachers, both individually and collectively, are clear about the concept, the value, and the process of change.
   a. Conceptual clarity—Members understand the proposed change and how it differs from their current practice.
   b. Value clarity—Members are convinced that the change offers an improvement over current practice.
   c. Procedural clarity—Members understand the steps to be taken during the implementation.
3. Resources—There are adequate and appropriate resources to support the implementation. Members identify their own resource needs. Provisions are made for physical resources—facilities, equipment, materials; organizational resources—workload, class size, class composition; professional support—coaching, training, in-service.

4. Time—There is adequate time for each phase of the implementation. Members have enough lead-time to achieve conceptual, value, and procedural clarity. They have additional time during the implementation process to assess, modify, and solve unanticipated problems. They have time to evaluate, share, and report what they have learned.

5. Professional Autonomy—The implementation recognizes the diverse talents, interests, and experiences of teachers. Members can adapt and implement the plan in a variety of ways.

6. Professional Development—The professional development of members is recognized as a key element of the implementation. The nature and timing of professional development specific to any implementation are determined by members in the context of their ongoing personal and professional growth.

7. Empowerment—The implementation increases the confidence, vitality, and feeling of influence of both students and teachers.

8. Involvement and Communication—The implementation provides for the involvement of teachers, parents, students, trustees, and district and ministry staff in ways that foster ownership and commitment.

9. Diversity—The implementation acknowledges the uniqueness of communities, school districts, and schools, and the diverse needs and expectations of parents and students. The process is flexible enough to accommodate these differences.

In this context, teachers determine what is appropriate and necessary. They apply their skills in keeping with their professional judgment. Teachers dedicate themselves to their work according to their determination of where their skills lie. This perspective emphasizes that teaching is a demanding job that requires creativity, spontaneity, and resourcefulness. Teaching demands a relationship between teachers and their employer that accommodates these needs. The BCTF (2002) describes their members’ professional autonomy in student assessment and evaluation as:

"Teachers must assess, evaluate, and report student progress in relation to the learning outcomes in the prescribed curriculum. Teachers have professional autonomy in deciding what methods to use to assess and evaluate student progress in their classrooms—observation, tests, portfolios, checklists, written assignments, projects, etc.

These views of professional autonomy underlie an industrial model of teaching where collective bargaining legitimizes teachers’ security while, at the same time, distinguishes them as independent experts. Elmore (2003, 2) argues that:"
The culture of [American] schools heavily favors people with years of service, whether they are effective in their work or not, whether they have mastered content and pedagogy at higher levels or not, and whether they are active learners in their careers or not.

Gaskell (1995, 203) posits that “the principal is at the intersection of conflicting demands, balancing professional autonomy and responsibility to the larger community.” The British Columbia Principal and Vice-Principal Association (Wright, 2003) contends that the professional autonomy clause of the collective agreement hampers school administrators in the performance of their duties. In this workplace environment, school principals are expected to provide administrative leadership, in consultation with teachers and the community, that reflects the aspirations of parents and the school community and that is consistent with provincial and district guidelines. Principals’ duties include the implementation of educational programs; teaching and learning activities; and student evaluation and assessment and reporting to parents and the school board. Principals are expected to be knowledgeable about their school and the strengths and weaknesses of the staff. Principals and vice-principals are expected to create an organization where educational specialists, teachers, librarians, and counsellors work cohesively and together. They are also expected to develop a culture of achievement in which the development of all students is fostered and encouraged. Senge (2000, 43) describes the underlying assumptions of industrial-age school workplaces as “(w)e assume that this sort of division of labour is an obvious necessity of working together. But we see no compelling need to build partnership among those people or a sense of collective responsibility.”

The Ministry of Education approach to addressing these challenges has been to provide grants of $160,000 to the British Columbia Principal and Vice-Principals Association (BCPVPA) to deliver a course on the supervision of instruction. Components of the course (BCED, 2003) include building learning communities, coaching and mentoring, and correcting teaching behaviours. The Minister of Education (2003) asserts that this program would “…enhance principals’ skills in assessing classroom teachers’ performance and directing change.”
School district officials have a responsibility to provide professional leadership in the design and implementation of education programs in districts, and are accountable to the local school board. The duties of the superintendent of schools include implementing the school act, its regulations, and orders of the minister. The Director of Instruction’s role is to improve instruction within the school district. School boards have a responsibility for implementation of provincial and local education programs; student access and achievement; teaching performance; and school finance, facilities, and accountability. They develop local programs, establish and manage schools, and employ and manage staff.

District- and school-sponsored professional development tends to emphasize process and procedure over subject-matter knowledge. The BCTF makes the point that teachers have the right to professional development days and that teachers need to be actively involved in the planning of those days. The BC Teachers’ Federation propose (BCTF, 1998) that a teacher as “…an autonomous professional determines, in concert with BCTF colleagues and the local union, the content of Pro-D activities scheduled for non-instructional days and further that they not be used for accreditation….” The ministry and school districts are not focused on managing professional development.

It is not clear that the concept of professional accountability in situ recognizes the central connection between teacher quality and student achievement. If it did, one would expect that a school district would provide principals and teachers with ongoing access to the knowledge and support necessary to make sound educational decisions in their schools and classrooms each day in order to improve student learning.

The Ministry of Education is both the de facto employer of teachers and a policy setting, funding, and evaluation agency. It does not deliver service to students. British Columbia’s public school system consists of 60 school districts responsible for operating 1,800 schools with about 614,000 students in classrooms and almost 17,000 students in continuing education. The
Ministry of Education provides an annual operating grant to each of the province's 60 public school districts. For 2000/2001, the grant was over $3.75 billion. Of this amount, about $3.3 billion provides for the operation of the traditional system of students in classrooms being taught the curriculum by teachers. In addition, about $460 million in targeted funding was provided for learners who have special needs or who are Aboriginal. The government also provided over $140 million to support eligible independent schools.

In 2001/2002, the new government exercised its de facto responsibilities with a significant flourish. They imposed a three-year replacement collective agreement on teachers. School boards are now required to develop, submit, and make available to parents and residents accountability contracts respecting student achievement. The government has incorporated the previous school accreditation policies/program into a new and wider accountability cycle. Parents are provided with a more formal role in the governance of each school through the establishment of a school planning council in each school. School planning councils have been created and required to submit annual growth plans for the school to the school board.

The government has also changed how funds are allocated to school districts. Children are allowed to attend any school in any school district subject to application procedures determined by the school board and available space, at the same time protecting the rights of students to attend a neighbourhood school. Data about school performance is to provide the basis for planning.

Assessment regimes, professional development, and different forms of school accountability are being implemented across Canada and around the world. In British Columbia, school boards have entered into contracts with the education ministry and schools have put forward school plans to improve student achievement. Plans that identify weaknesses in their educational programs and list goals for improvement (i.e., district initiatives to organize teaching and learning) are part of the Campbell Liberal government's policy for enhanced student
achievement (Steffenhagen, 2001, 1). The district accountability contracts were to give trustees freedom to decide what students in their various communities need, but it will also force the trustees to make and document improvements.

In his testimony on October 16, 2001 before the British Columbia Legislative Standing Committee on Education, the deputy minister of education, Emory Dosdall, described accountability plans as follows:

We’re asking them [superintendents] very specifically to look at the data they have. Educators have lots of data that we’ve collected. Look at the data; analyze the data. If in fact you have analyzed the data, have looked at that data, and then based on that, what decisions are you going to make in order to increase the student achievement of the kids within your particular district? What plans are you going to put in place?
The plan that they put in place in Delta can clearly be different from the plan they put in place in Coquitlam or that they put together in Prince Rupert or Bella Coola or whatever the case may be, depending on their area of expertise, the population that they’re dealing with and so many factors. In the first instance, are they focused on kids, and are they focused on kids’ student achievement? That’s the discussion that’s taken place. (Hansard, 2001)

Dosdall’s emphasis was on outcome data. His rhetorical question to school districts, “what decisions are you going to make and what plans are you going to put in place?” puts the onus on school districts to pursue innovative strategies.

The government implemented Dosdall’s vision with the *School Amendment Act, 2002*. Anderson (2003, 2) identifies the core elements of this education accountability agenda as:

1. Establishing clear standards about what is to be achieved by students and schools.
2. Providing increased opportunities for choice and flexibility in public schools.
3. Enhancing opportunities for parental input into the school system.
4. Reducing emphasis on curriculum content as a means of controlling outcomes.
5. Enhancing accountability through required plans to improve achievement at the school and school district level. Data about school performance are to provide the basis for planning.

The *School Amendment Act, 2002* is the foundation for the new Ministry of Education accountability policy. The act absorbs the previous accreditation program/policies into a new and wider accountability cycle. The intentions of the amendments to the *School Act* are to ensure that
the system is accountable for improving student achievement; to provide students and parents with more choice about the school children attend and educational program they follow; to recognize the importance of parent involvement in how schools operate; and to provide boards with greater flexibility and to enable boards to be more entrepreneurial.

The act formalizes the requirement that boards, by October 31, 2002, develop and submit accountability contracts respecting student achievement, and make them available to parents and residents. It also allows the Ministry of Education to become involved in affairs of a school district through appointment of special advisors with broad authority to address educational, financial, and community matters. The overall goal of the government (Anderson 2003, 2) is “...to inform education policy decisions by knowledge of student results, and to shift policy attention away from processes and resources, towards results and improvements.” The Ministry of Education Common Student Information System (2003) request for proposal (RFP) document captures the government’s education information strategy. Figure 10 below (RFP, 2003, 16) describes a Ministry and school districts’ view of information business drivers for education.

Figure 10: Business Drivers for Education

Source: (RFP, 2003, 16)
This common student information strategy covers the ministry's view of the information needed by all schools, school planning councils, school boards, and the ministry. The request for proposal was developed in consultation with school districts. The Common Student Information System (CSIS) revolves around providing the information to manage education effectively, monitor student achievement, and ensure accountability; reducing reporting costs and avoiding future additional reporting costs; and enabling business change and new education delivery methods to achieve the targeted outcomes. CSIS does not provide for the collection of pedagogical and student engagement information.

The transition to the School Plan model occurred during the 2002/2003 school year. From that point onward, school plans were to include clearly stated goals; analysis and rationale for the selection of these goals; an indication of the specific performance targets for improving student achievement; and a description of the data that the school uses to track its progress. To develop comprehensive guidelines and training programs to support this initiative, the Ministry of Education has worked with its partner groups – the British Columbia Confederation of Parent Advisory Councils (BCCPAC), the British Columbia Principals and Vice-Principals Association (BCPVPA), the British Columbia School Superintendents Association (BCSSA), the British Columbia School Trustees Association (BCSTA), and the British Columbia Teachers Federation (BCTF).

The school plans focus on specific areas of student achievement. Student achievement includes intellectual, human and social development, and career development. The plans should reflect the context of the school community and the full range of students attending the school. The School Planning Councils are asked to consider district goals in the development of school plans. Schools have been encouraged to use a range of data sources in their planning, including classroom, school, and district data and data provided by the ministry. The Councils have been asked to also consider the performance of significant groups depending on the population of the
school (e.g., aboriginal, ESL, special needs, etc.). The ministry guidelines requested that goals identified by schools should be specific, measurable, achievable, relevant, and timely. The format, timing, and process for submission of school plans to the school board were to be decided by the school district. School plans are to include: clearly stated goals; analysis and rationale for the selection of these goals; an indication of the specific performance targets for improving student achievement; and a description of the data that the school uses to track its progress.

The plans developed by the School Planning Council at each school were used to inform the district accountability contract. The ministry envisioned four phases in the school planning process: 1) collect and interpret student performance data; 2) review and report; 3) develop the plan; and 4) implement, monitor, and report. In 2002/2003, the first three phases occurred in school districts across the province.

The government's accountability cycle operates at the school, district, and ministry levels. The cycle involves collecting and analyzing data, reviewing information, and identifying areas of strength and areas that need improvement; reviewing information; developing goals, strategies, and expected results; and implementing strategies, monitoring progress, and revising as needed. This accountability cycle leads school districts to acquire, produce, and disseminate data and information.

This section described the policy, legislative, and labour relations environment shaping teaching and learning policy and practice in the school system. British Columbia's school districts are governed by over 30 provincial laws, specific regulations, and legislated collective agreements.

Education accountability operates in a contested environment. The roles of teachers, their principals, the school district, and the ministry are all under challenge from different partners in the education system. The accountability regime in British Columbia has the political
support of the BC Superintendents Association, the BC School Trustees Association, and the Confederation of Parent Advisory Councils. Education academics and the British Columbia Teachers’ Federation frequently challenge the outcomes-based accountability regime.

The provincial government, as the employer and funder of schools and classroom teachers, is promoting and investing in data that measures student achievement as the framework for accountability at all levels of the education system. School district and school professional development continues to highlight the desires, requests, and needs of teachers. Information and discourse related to pedagogy and student engagement are seldom visible in the education system and when they do appear, these activities are not often dealt with directly or systematically. The outcomes-focused accountability system is constructed against a labour relations background where funding of education, collective bargaining, and accountability are not well connected. This disconnect is captured in the following commentary from the BCTF (2002):

Teachers are often unclear who is making them do what they are being required to do, i.e., what things are required by provincial ministerial orders, what things are required by board policy, what are just district guidelines that are advice only, and what are simply the whims of different principals. The inclusion of previews or overviews with report cards often falls in the latter category. It is important that locals are clear on which reporting requirements in their district have the force of a provincial ministerial order or board motion, and which do not, in order to protect members’ professional autonomy and workload.

The education workplace in British Columbia is shaped by a large number of laws and regulations. The provincial government is the de facto employer in the education system, not the school board. The government’s view of accountability is that school boards and schools manage education effectively, monitor student achievement, and ensure accountability. Changes to the School Act implemented this view and required boards to develop and submit accountability contracts respecting student achievement, and make them available to parents and residents.
At the same time, the contested role of the principal, school district, trustees, ministry, and the teacher is the unspoken story in the education system. Educators’ job duties do not include any reference to communities of practice, sharing of information, or other collegial activities. A view of professional teacher autonomy underlies the operations of the education system. Gaskell (1995, 188), in the National Report of the Exemplary School Project, makes the point that “in every staffroom, there is a tension between individualism and collegiality, professional autonomy and collaboration.” Consequently, discussion about implementation barriers, incentives or disincentives, and legitimate alternatives are seldom of high visibility in the policy and program process. This environment influences the tenor of how school-level achievement measurement impacts on individual student achievement over time and on pedagogy and student engagement in the classroom where the teaching and learning occur. Education system labour relations has reinforced this buffering of teaching and learning from examination by appearing to accept teachers as independent experts on the technical issues of teaching.

Raptis and Fleming (2003, 20) argue that within this policy space, “unless policymakers reclaim their interest in curriculum and instruction, it is not reasonable to expect that these two critical areas of educational activity will become important parts of the public policy agenda in education for provincial governments.” Output and outcome data dominate the Ministry policy agenda. The British Columbia education system policies, practices, and labour relations policy did not appear to reflect significant interest in touching upon instruction. The School Act, the Statement of Education Policy Order, funding decisions, information initiatives, and school district school workplace practices all appear to shield the technical core of teaching from scrutiny.
Chapter 5  The Ministry of Education Working Knowledge Profile

School district leaders can support the improvement of the practice of teaching by gathering tacit and explicit knowledge, organizing this knowledge, and mobilizing its use. Gaskell (1995, 252) contends that “school teachers and administrators...need more information to help them assess and improve their performance.” Earl (2003, xi) suggests that:

Historically, educational assessment has largely been assessment of learning, designed to accredit or judge the work of students. Sometimes, it has been for learning, with feedback loops to ensure that students are given cues to review their learning and move forward. Assessment as learning goes even deeper, however and draws on the role of personal monitoring and challenging of ideas that are embedded in the learning process, and the role of both students and teachers in fostering this process.

The role of educators in improving the core technology of teaching is clearly a critical activity. The OECD (2004, 4) argues that “the tradition of education systems is often characterized as knowledge-poor – in the sense that education systems still face difficulties in enabling schools and teachers to share, jointly develop and implement knowledge about their work and performance.” Fullan (2003) posits that education knowledge bases aid the pursuit of effective leadership. DiBella and Nevis (1998, 28) point out that one way to understand the content of what is being learned is to ask what knowledge is being produced, acquired, or disseminated in the organization. These perspectives I believe point to the potential of a schema or model for examining current education working knowledge management practices.

The umbrella schema of ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ typology was used to gain an understanding of Ministry of Education and North Vancouver knowledge management practices. The resulting profiles describe what data or facts are crucial to these organizations when it comes to triggering a search for new solutions; what causalities are at the core of the dominant models applied by them; what skills, i.e. the capability to do something, are important; and what information about who knows what and who knows what to do is significant?
In constructing a working knowledge profile for the Ministry of Education’s reporting policies, key ministry policies and documents that were examined included accountability contracts, district reviews, ministry compliance audits, district student achievement profiles, school plans, reports describing students’ school progress, and school performance reports school plans.

*Accountability contracts* detail the specific goals that individual school boards have set to enhance student achievement. Student achievement includes intellectual, human and social development, and career development. Accountability contracts set goals based on results from classroom, school, and district assessments; Foundation Skills Assessments, provincial exam results, school completion rates, and graduation rates; grade-to-grade transition rates; achievement of aboriginal students; achievement of special education students; human and social development issues/safety issues; and the results of parent, staff, and student satisfaction surveys. Accountability contracts also reflect the unique characteristics, priorities, and needs of each district.

*District Reviews* (Ministry of Education, 2003) focus on improving student achievement through school and district planning. The district reviews examine school districts’ goals, rationale, data, strategies, structures, results, communications, and teamwork related to school and district improvement. These items are defined as follows:

1. **Goals:** Improving districts and schools have a strong instructional focus. This focus is made visible in relevant goals for improving achievement for all students.
2. **Rationale:** Improving districts and schools have a thorough and connected set of reasons, based on evidence, for the selection of their student achievement goals.
3. **Data:** Improving districts and schools are actively considering at least three sources of evidence including classroom, school, district and provincial data. The analysis of this evidence informs the selection of the district goals and is used to monitor progress.
4. Strategies: Improving districts and schools have well-organized, focused improvement plans in place. The strategies selected to achieve the goals are an intelligent blend of research, best practice, and innovative thinking.

5. Structures: Improving districts and schools have aligned structures – resources, time, and organizations – to get the results they want. This includes, but is not limited to, effectively differentiating resources in the areas of highest need for improvement.

6. Results: Improving districts and schools get improved results – at the classroom, school, and district levels.

7. Communication: Improving districts and schools are involved in continuous dialogue about student achievement and make public their improvement goals and the progress being made in specific areas of focus.

8. Teamwork – District and School Coherence: Improving districts and schools have an interactive strategy for connecting school and district goals. School uniqueness and school district directions are both valued.

9. Teamwork – District and Parent Involvement: Improving districts and schools work as a team with parents, including specific groups of parents, to improve student achievement.

10. Leadership/Teamwork: Leaders in improving districts and schools have a clear vision for, and commitment to, improving achievement for all students. Leadership at all levels, in all roles, is encouraged and systematically developed in a collaborative learning community with a focus on improving student achievement.

The district review process also examined district accountability contracts and school plans to improve student achievement. The district reviews are charged with making recommendations to the school board and to the minister about improving student achievement; and with identifying promising practices that will assist other districts and schools in their efforts to improve student achievement.

*Ministry compliance audits* are conducted annually to ensure the accuracy and appropriateness of the student and school data reported to the Ministry of Education by school districts. This data is used for statistical, research, and funding purposes. In addition, student enrolment audits are conducted to ensure districts are in compliance with the ministry's school and student data collection instructions.

*Reports describing students' school progress* (including report cards) are required by the Ministry of Education to be provided to parents of students. Three of the reports are required to
be formal written reports and two are informal reports. Formal written reports for Kindergarten to Grade 7 and, when appropriate, for Grades 8 to 12 describe what students are able to do; the areas in which students require further attention or development; and ways to support students in their learning. Informal reports to parents may include telephone calls, student-led conferences, parent-teacher conferences, and the use of journals. Schools and teachers determine how they will informally communicate with parents. Parents of students in Kindergarten to Grade 3 receive oral and written comments on students' school progress. Comments are to relate progress with regard to the expected development of students in a similar age range. In Grades 4 to 12, letter grades are used to indicate students' levels of performance in relation to the learning outcomes for each course or subject and grade.

The Ministry of Education's accountability contracts, district reviews, compliance audits, and reports describing students' school progress have been organized in relation to the 'Know Why', 'Know What', 'Know How', and 'Know Who' typology. The following section sets out an organizational knowledge profile of ministry accountability contracts and district reviews in relation to the 'Know Why', 'Know What', 'Know How', and 'Know Who' typology. Table 13 describes the knowledge profile found in the ministry accountability regime.
Table 13: Ministry of Education Accountability Regime Knowledge Profile

<table>
<thead>
<tr>
<th>Knowledge Typology</th>
<th>District Review</th>
<th>Accountability Contract &amp; School Plans</th>
<th>Compliance Audits</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Know Why’</td>
<td>International research on school and district improvement</td>
<td>Research on school and district improvement</td>
<td></td>
</tr>
<tr>
<td>‘Know What’</td>
<td>Data: Improving districts and schools are actively considering at least three sources of evidence including classroom, school, district, and provincial data. The analysis of this evidence informs the selection of the district goals and is used to monitor progress. Results: Improving districts and schools get improved results – at the classroom, school, and district levels. Ministry compliance audits are conducted annually to ensure the accuracy and appropriateness of the student and school data reported to the Ministry of Education by school districts. Reports (including report cards) describing students’ school progress</td>
<td>Results from classroom, school, and district assessments, Foundation Skills Assessments, provincial exam results, school completion rates and graduation rates. Grade-to-grade transition rates. The achievement of aboriginal students. The achievement of special education students. Human and social development issues/safety issues. The results of the parent, staff, and student satisfaction surveys</td>
<td>Data: student demographics, school demographics: number of students, educator information, program information</td>
</tr>
<tr>
<td>‘Know How’</td>
<td>Structures: Improving districts and schools have aligned structures – resources, time, and organizations – to get the results they want. This includes effectively differentiating resources in the areas of highest need for improvement. Communication: Teamwork – District and School Coherence Teamwork – District and Parent Involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Know Who”</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Ministry ‘Know What’ Knowledge Profile includes activities to build and enhance the knowledge information about students and school performance. It reflects the ministry’s
emphasis on input and examination assessment facts as crucial when it comes to triggering the search for solutions to improving student achievement. The accountability regime, like the system information strategy, is silent on pedagogical information about instruction and student engagement.

The ministry states that the ‘Know Why’ focus of district reviews and school plans is international research on school and district improvement. Anderson (2003, 6) referencing James F. Leonard’s (1996) book, The New Philosophy for K-12 Education: A Deming Framework for Transforming America’s Schools, suggests that managing for results requires a well-articulated, clear, and sustainable plan to take action on information about performance. The ‘Know How’ focus in district reviews includes well-organized, focused improvement plans in place.

The ministry characterizes ‘Know How’ strategies as an intelligent blend of research, best practice, and innovative thinking. Improving districts and schools are those involved in continuous dialogue about student achievement and make public their improvement goals and the progress being made in specific areas of focus. Districts and schools are to have an interactive strategy for connecting school and district goals. School uniqueness and school-district directions are both valued. Districts and schools are to work as a team with parents, including specific groups of parents, to improve student achievement. Leaders in improving districts and schools are said have a clear vision for, and commitment to, improving achievement for all students. Other than a reference to a collaborative learning community, no discussion is found in the ministry documents of ‘Know Who’, which involves information about who knows what and who knows what to do.

The Ministry of Education District Review Guide (2003) states that “...leadership at all levels, in all roles, is encouraged and systematically developed in a collaborative learning community with a focus on improving student achievement.”
As is sometimes the case, what is not said may also inform an organization's knowledge profile. The District Review Guide (September, 2003) focuses on 10 key areas related to school and district improvement, but does not explicitly reference school or school districts' instructional focus, learner engagement or, the supervision of instruction. Compliance audits, reports describing students' school progress, also do not openly address teaching and learning – the relationship between students, teachers, and the curriculum; educators, novice or master teachers' experience, education, skills, or capabilities; or the supervision of instruction. Concepts of community of practice were not found in the material. It is also worth noting that in the area of 'Know Who', involving information about who knows what and who knows what to do, no examples were found in the ministry activities. District reviews appear weak at what must be a central task of educational change, namely the specific explanation and recognition of what can be shown to be best instructional practices. Much of what district reviews say seems to be based on opinion and not solid evidence about 'what works' in particular circumstances.

The British Columbia Ministry of Education and the school districts' data activities are described and examined in the following section.

**Ministry of Education Data Activities and Analysis**

British Columbia's Ministry of Education participates in national and international assessments and studies and conducts Foundation Skills Assessments (FSA), provincial examinations, and satisfaction surveys. Information about teaching is sometimes collected. The assessments are designed to measure student achievement but are not linked to their teaching and learning experiences so as to support correlations of teacher pedagogy to learner outcomes. The ministry also collects additional data about schools, school district revenue and expenditure, student registration data, teacher data, and other data to obtain information for the purposes of

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7 The province in the late 1990s did have in place the Provincial Learning Assessment Program (PLAP). It was a program of regular assessments to collect student and educator demographics, class information, and test results.
public accountability, improving programs and schools, and certifying students who meet graduation requirements. The province's performance measures of student achievement provide outcomes data for decision-making and planning at all levels of the education system. The Ministry of Education believes that measuring achievement contributes to raising standards and clarifying public expectation that all students receive a quality education. They propose that large-scale assessments determine students' knowledge, skills, and attitudes in core and elective areas of learning.

The Program for International Student Assessment (PISA) is an Organisation for Economic Co-operation and Development (OECD) program designed to provide policy-oriented international indicators of the skills and knowledge of 15-year-old students. It is organized to answer questions like:

- How well are young adults prepared to meet the challenges of the future?
- Are they able to analyze, reason, and communicate their ideas effectively?
- Do they have the capacity to continue learning throughout life?

Are some kinds of teaching and school organization more effective than others?

PISA aims to assess to what degree students approaching the end of their compulsory education have acquired some of the knowledge and skills that are essential for full participation in society.

British Columbia also participates in the Council of Ministers of Education (CMEC) cyclical program of Pan-Canadian assessments of student achievement in mathematics, reading and writing, and science. The School Achievement Indicators Program (SAIP) is developed by subject experts from all provinces and territories and is administered to 13- and 16-year-old students across Canada. SAIP information provides a basis for examining the curriculum and other aspects of the school system.

The Foundation Skills Assessment (FSA) is a province-wide assessment program that first began in 1999 to replace its predecessor, the Provincial Learning Assessment Program.
(PLAP). It consists of tests in three subject areas: Reading, Writing, and Numeracy, and is conducted by the Ministry of Education in Grades 4, 7, and 10 in all BC schools in May each year. FSA provides a snapshot of how students are doing at several key stages of their schooling, and is intended to complement regular classroom assessment. FSA measures critical skills that are embedded in the provincial curriculum. While these skills are not confined to any single course or grade, they very much are linked to prescribed outcomes, particularly in the language arts and mathematics curricula. FSA results are returned to districts and schools each fall to help provide, together with other information collected by teachers, important information for district accountability contracts and to develop school growth plans by school planning councils and to share with individual students and parents.

**Provincial examinations** are developed by teachers and are based on provincial curriculum. The exams are marked by teachers from all over the province of BC, and the process of each testing session is reviewed by an official legislated board of examiners. The provincial exam score is worth 40% of a student's final course mark, and the school mark is worth 60%. The examinations data contain individual student exam records on provincial and non-provincial examinable courses in Grades 11 and 12. The Provincial Examinations Program is designed to provide performance standards established at the provincial level. The program gives students the opportunity to demonstrate excellence and ensures that expected levels of performance for students are communicated to students, teachers, and parents. The public is reassured that standards exist through accountability, which is provided through data obtained from the marking process and ensures informed decisions are made in schools and in curriculum. The program also provides equity to students who plan to enter into post-secondary studies, or for employment purposes, and ensures that examinations development, administration, and marking are carefully monitored for validity and reliability.
Satisfaction Survey data were collected by the BC Ministry of Education in 2002 and 2003 using opinions from Grade 4, 7, 10, and 12 students, parents, and school staff on themes such as achievement, human and social development, and safety. The Satisfaction Survey is a recent addition to the ministry's annual data accountability program. The information gathered from the survey provides a common basis for discussing satisfaction on general and specific topics from the perspective of different respondent groups. It is compiled into statistical summary reports for provincial, district, and school levels.

The ministry collects additional data each year on every public and independent school in the province of British Columbia. This database maintains a history of all schools in BC since 1990 and provides information on school name, address, and contact information; school facility and organization type; and school educators.

The Ministry of Education collects school district budgeted and actual revenue and expenditures data. School district revenues are largely derived from provincial operating grants, some being provided by the Ministry of Education for specific purposes. Other revenue sources include federal grants, school referendum taxes, rentals and leases, and investment revenues. School district expenditures are organized into several fund categories (accounts) that include operating, local capital, and provincial educational initiatives. No budgeted and actual revenue and expenditures data at the school level are collected by the Ministry of Education. Information about budgets, expenditures, and student achievement are not part of the present ‘Know What’ vision of the ministry.

The ministry collects student registration data for Grades K-12 which includes demographic and program-related information. Student registration data is one of the major components of the ministry’s annual data collection program. The data provide information on all students attending public or independent schools in the province, including their birth date, gender, and grade level, primary language spoken in the home, the school they are attending, and
the program and number of courses they are enrolled in. The current system for collecting the
student-level data has been in place since 1995 and, over the years, has evolved with technology
and changing information needs.

The Ministry of Education also collects public school educators' qualifications and salary
data. Qualifications data include years of teaching experience, school name, and type of
certificate held. Salary data include basic salaries and additional allowances.

It is interesting to note that the student registration data collection process has
sophisticated quality controls to ensure data quality while the educator data has no quality
controls.

The Ministry of Education’s data activities have been organized in relation to the ‘Know

Table 14: Ministry of Education Data Knowledge Profile

<table>
<thead>
<tr>
<th>Knowledge Typology</th>
<th>Ministry Data</th>
</tr>
</thead>
</table>
| ‘Know Why’
What causalities are at the core of the dominant models applied? | No information collected |
| ‘Know What’
What facts are crucial when it comes to triggering search for new solutions? | Foundation Skills Assessments, Provincial
Examinations,
School Satisfaction surveys, School
district revenue and expenditure,
Student registration data,
Teacher data |
| ‘Know How’
Refers to skills, i.e. the capability to do something | No information collected |
| ‘Know Who’
Involves information about who knows what and who knows what to do. | No information collected |

It is interesting to note that the data collection activities do not reference teaching and learning –
the relationship between students, teachers, and the curriculum – nor are data collected with
respect to educators, novice or master teachers’ experience, education, skills, or capabilities; the supervision of instruction; or professional development activities. The Ministry of Education identifies information for professionals and services for educational professionals identifies 32 resources for educators (Appendix F). These resources are not significantly or directly about improving instruction or learner engagement. Concepts like community of practice were not examined. Nor is the national and international data for British Columbia examined in relation to the kinds of teaching and school organization that are more effective than others.

Leithwood (1999, 9) makes the argument that accountability strategies and tools operate “...on the assumption that holding schools more accountable for achieving their processes and outcomes will itself trigger improvements....” This appears to be the case in British Columbia. The province’s approach reflects the ministry decision to inform education policy decisions by knowledge of student outcomes, and to shift attention towards results and improvements. The ministry ‘Know What’ approach becomes a principal default planning model for school district leaders.

I also examined key ministry and school documents to construct knowledge profile of the ministry and the NVSD accountability domains. Gaskell (1995, 252) sets a context for education system data activities when she argues that:

because the consequences are not clear, because there is public criticism of schools, because gathering information is time-consuming, and expensive, and because interpretations are not straightforward, collecting more data about schooling is often seen as potentially dangerous and misleading rather than helpful.

Accordingly, a knowledge profile of education can tell us something about the schools’ lowest common data denominator; and how each party systematically uses data and information to construct meaning. A knowledge profile portrays: what data or facts are seen as viable and critical to the organizations; what causalities are at the core of their practice; what capabilities
are valued; and what information about education capital (who knows what and who knows what to do) is significant.

A conclusion drawn for the analysis presented in this chapter is that the knowledge being produced, acquired, or disseminated in the British Columbia education system is dominated by school-level input and assessment facts. Robust pedagogical knowledge about instruction and student engagement are not systematically valued in how school organizations use data and information to construct meaning. Basic information about teachers that is collected is of suspect quality, coverage, and timeliness. Nor is it clear that ministry policies and documents embrace the need to implement scalable reform inside schools and across school districts. These efforts appear to reflect an underlying accounting model of data driven by outcome data, school finance, and collective agreement management information.
Chapter 6   The NVSD: Knowledge Profile

This chapter describes in some detail the situation in the NVSD with regard to its knowledge management practices in light of various planning processes that operate within the district. A brief analysis of the position descriptions for the Superintendent of Schools, Assistant Superintendents, Principals, Vice-Principals, and District Principal – Program Services, is included in this chapter. The umbrella schema of ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ typology has also been used to portray North Vancouver knowledge management practices.

Provincial legislation, regulations, funding, and shifts in education policy shaped the NVSD’s planning, priorities, initiatives, and decision-making in 2002/03. The NVSD has to educate about 18,500 students enrolled in Kindergarten to Grade 12. They also have over 15,000 learners registered in a variety of adult and community education programs/services. The district employs 2,400 people of whom 1,000 are teachers who work in 32 elementary schools, two alternate schools (KLASS and Windsor House), seven secondary schools, and a residential outdoor education centre for a total of 42 separate organizations. The district offers a comprehensive K-12 education program consisting of over 200 provincial and locally developed educational programs and services in the humanities, mathematics/sciences, physical education, fine arts, and applied skills. They also have early French immersion, late French immersion, and secondary bilingual programs. They received over $120 million from the province to deliver these programs and services.

The NVSD has a relatively diverse student population. In 2001/02, English as a Second Language (ESL) enrollment made up 10.6% of its students (provincial ESL percentage 9.6); Special Education (SEd) enrollment comprised 9.9% of their students (provincial SEd percentage 10.8); and aboriginal enrollment was 2.8% (10.8 percent provincially). Overall academically the district is very strong and successful. At the same time, its aboriginal learners are dramatically
less successful compared to non-aboriginal students. North Vancouver is also recognized as one of the leading districts in British Columbia. It has nationally recognized local programs, including Band and Strings, Reading 44, Firm Foundations, and the Artists for Kids Trust. This abbreviated list of activities reflects a long and distinguished tradition of excellence in this school district. These cultural values appeared to be the foundation upon which their current repertoire of technical planning, implementation, and achievements are built.

Service delivery models like Reading 44 or Firm Foundations (Appendix G) are examples of the districts’ instructional leadership strategy. One of the biggest questions that came out of the North Vancouver leadership teams in the first two years of implementing Reading 44, was, how do we know we’re making a difference? The teachers were looking for large-scale assessment at that point, but couldn’t find an easy one to administer. The district now has a lot of smaller indicators as well as the Foundation Skills Assessment data. Their continuous improvement strategy for service delivery models reflects implementation and resource issues. One district educator described the service delivery strategy as an approach where “…what we are doing, we are listening to teachers’ input, we are working with the prescribed curriculum, we are going back to what the research says about the subject matter, and we are producing a resource that leads them to other resources, so it’s not void of resources.”

North Vancouver’s District Accountability Contract and School Plans

The district had in place a planning and leadership framework before the ministry’s 2002 provincial accountability regime came into being. The NVSD’s curriculum and instruction priorities for 2001-2002 covered reading, mathematics, social studies, addressing diverse needs of students in the classroom, safe and caring schools, improving the success rate of First Nations students, application of information technology, and assessing and reporting student progress
Their 2001-2002 District Accountability Contract contained 72 strategies relating to four goals. The goals were:

To Improve Reading Proficiency in Students
To Improve Success Rates in Mathematics
To Improve the Success Rate of Aboriginal Students
To Provide Safe and Caring School Learning Environments

The NVSD Accountability Contract template shapes the knowledge management culture of the district by identifying implementation strategies and key performance measures for each district goal. The term 'strategies' in the North Vancouver plan refer to a variety of improvement-related activities. The strategy and key performance measures contain examples of the district and schools' 'Know How' and 'Know Who' management practices. An example of the template is set out for the goal, 'To Improve Reading Proficiency in Students' in Table 15 below.
### Table 15: District Example

<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
<th>Key Performance Measures</th>
</tr>
</thead>
</table>
| 1.1 Increase the percentage of students who meet the expectations for reading readiness by the end of Kindergarten | Implement the program: Firm Foundations: Early Literacy Teaching and Learning Resource each Kindergarten class with program document and related classroom material. In-service Kindergarten and learning assistance teachers’ networks six times a year. Administer Test of Phonological Awareness (TOPA) screen January 2002 to all Kindergarten students. Use intervention program Launch into Reading Success for “at risk” Kindergarten students identified on TOPA. Administer TOPA June 2002 to “at-risk” Kindergarten students following intervention. | **Baseline:** January 2002: Percent of Kindergarten students who meet reading readiness requirements as defined by TOPA  
- Reading readiness: 85%  
**Target:** June 2002: Increase the percent of students who meet or exceed the January 2002 baseline by at least 3%  
**Actual:** June 2002: Percent of Kindergarten students who meet reading readiness requirements as defined by TOPA  
- Reading readiness: 91% |

Each goal and objective in the accountability contract (and school plans) contains strategies and key performance measures. Upon analysis, the contract contains 22 literacy strategies, 15 numeracy strategies, 19 aboriginal strategies, and 16 strategies for safe and caring schools. The articulation of strategies is a key piece of information about the knowledge management regime in the district. The strategies are a vehicle for the district to tell their ‘Know How’ stories. The distribution of the accountability contract strategies by goal and by ‘Know How’ is set out in Table 16.
Table 16: Strategies by Goal and by ‘Know How’

<table>
<thead>
<tr>
<th>Goals</th>
<th>Capture</th>
<th>Implementation</th>
<th>Sharing</th>
<th>Dissemination</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy</td>
<td>12</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Numeracy</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Aboriginal</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Safe and Caring Schools</td>
<td>5</td>
<td>2</td>
<td>9</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
<td><strong>29</strong></td>
<td><strong>17</strong></td>
<td><strong>3</strong></td>
<td><strong>72</strong></td>
</tr>
</tbody>
</table>

At the time of my professional involvement with the district, the initial challenge the district faced was knowledge management in relation to their “Know How” about data and information and technical assessment questions. Traditionally, the overall function of the student/school data system is record keeping and trying to satisfy the many partners in education from the ministry on down to the classroom teacher and the production of reports. The existing information systems have had relatively no influence on direct instruction. A district educator categorized their situation at the beginning of our work:

Well, those pilot projects did and do govern teaching strategies. However, that information was sort of piece-meal and stored in some format, maybe even paper format, or computer format, or whatever. With the individuals around the district who were tracking reading, or tracking math, it wasn’t stored centrally, and maybe an improvement would be to have all of the types of data collected and stored centrally.

Another North Vancouver colleague identified a second challenge as being able to ask:

Okay, so what does the data tell us? Oh, I think we did, I think that was a big eye opener for the district in that you can take the high level or you can unpack it to see what else it is telling you. That was the appetite that I think is, the snap shot isn’t enough to cause schools to, or the classroom teacher to respond to. It has to be unpacked to see what is it saying our students need to address or that we need to do more of. So looking to those units the analysis of the different aspects became important and for where there was a match, and there’s apples and oranges.

This appetite to unpack the data fits into their existing district leadership model.
North Vancouver’s School Plans

The district had easily been able to develop a process and general criteria and templates for the new ministry-mandated district and school planning systems. The district accountability contract template had been replicated for the school plans. One of the mandates in the new accountability regime is that the main job of the school planning council is to analyze data to help the principal of the school develop the annual school growth plan.

The district had invested a large amount of time in supporting their schools and school planning councils. An educator describes the impact of focus on data as follows, “I noticed that after the announcement of the school planning councils, and the school growth plans, that people suddenly had, and we talked about different plateaus, when that came out the people’s interest in the data seemed to crystallize....” Schools were expected to use a range of data sources in their planning, including classroom-level data (e.g., performance standards information, report card data, teacher observation), school-level data (e.g., attendance data, behavioural information, school-wide assessment information), and district assessment information and provincial data.

The district decided that school plans should focus on specific areas of student achievement (intellectual, human and social development, and career development). School planning councils were to consider the School District Performance plan (Accountability Contract) in the development of school plans. Schools could use their Accreditation Growth Plans and 2001 annual school progress reports in conjunction with the District Accountability Contract.

In addition to classroom, school, and district data, schools were to consider using in their plans the metrics provided by the ministry including: graduation rates (where applicable); grade-to-grade transitions (Grades 6-12); Foundations Skills Assessment information (Grades 4,7 and
government exam results and participation rates (where applicable); and parents, student, and staff survey results.

Schools were encouraged to have a maximum number of four goals. The goals were to be based on school district priorities. School goals were based on a wide array of student performance data. Additional school-based goals were required to utilize provincial, district, school, and/or classroom data. If there were more than five aboriginal students in a school, the school was required to have an achievement goal for this population. A school’s objectives (improve what for whom) were to specify a target group of students (cohort); include a time frame; and have no less than two and no more than four objectives per goal. School’s strategies (to enable their goals and objectives) were to: describe what actions would be taken to reach the objective; describe the programs of study that need to be implemented; and reference current district initiatives and service delivery models should incorporate at least three action statements and not more than six.

The district also had required the plans to include key performance measures. The baseline measures indicated entry-level performance of students prior to interventions described in the strategies. Targets set out desired increase in student achievement over designated periods of time. The actual measures showed the assessed student achievement level at the date designated in the target.

The consultation process, which was suggested to schools by the district, included paper surveys, telephone surveys, PAC meetings, staff meetings, and student council meetings as well as focus groups with any of the above. This plan was supported by training sessions for principals and school planning councils across the district in the winter of 2002-2003.

The organizational knowledge profile for the North Vancouver School District presented in this chapter indicates that curriculum and instruction priorities are the key knowledge priorities in the district. The enunciation of literacy, numeracy strategies, aboriginal strategies,
and strategies for safe and caring schools are central to the district’s knowledge management regime. North Vancouver has adopted the government accountability regime to support their desire to emphasize improving teaching and learning (curriculum and instruction) and consequently student achievement. The strategies that the district and schools have put in their plans represent a sophisticated ‘Know How’ approach to leadership and change; however, the district is hampered by the fact that the existing information systems and supervisory practices cannot contribute a great deal to directly or systematically describing, capturing, and/or measuring instructional practice or student engagement related to these strategies at the classroom or school level.

In this chapter, the North Vancouver District’s school plans have also been organized in relation to the ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’. This Working Knowledge Profile of each school and the district plan reflects the district and school’s public stories about ‘Know Why’, ‘Know What’, ‘Know How”, and ‘Know Who’. It offers observers one perspective about the character of the district and school’s knowledge management practices. The NVSD’s individual school plans illustrate both the tacit and explicit dimension of knowledge management activities. The plans also tell a story about the knowledge that the schools use to organize themselves, and to maintain themselves as functioning entities (Davenport and Prusak, 1998, 52).

The previous discussion of accountability describes the framework for school plans. North Vancouver’s school’s plans for the seven secondary schools and 32 elementary schools, two alternative schools, and one outdoor education centre, are structured around individual goals, objectives, strategies, and measures. The universe of goals, strategies, and measures in the 42 plans is then organized into categories using the taxonomy of knowledge developed by Lundvall and Johnson, (1994) and Lundvall (1999).
There are 148 goals mentioned in the 42 schools plans. These goals have been organized into categories based on a content analysis to identify the most oft-sited goals. The five most named goals are: literacy (reading and writing); numeracy (mathematics); aboriginal; safe and caring schools; and other. Thirty-two elementary schools had literacy goals; 30 had numeracy goals, 10 had aboriginal goals; 36 had safe and caring school goals; and seven identified other types of goals. All eight secondary schools had numeracy, literacy, and safe and caring school goals; three of the eight secondary schools identified aboriginal goals; one school identified another type of goal. Distribution of the goals by type and schools and participate rates of goals by school type are found in Appendix I.

The schools laid out 1,829 strategies to meet their stated goals. The distribution of the strategies by the five goals for all schools is: 657 for literacy, 435 for numeracy, 129 for aboriginal, 557 for safe and caring schools, and 51 others. Elementary schools had 17 literacy strategies, 11 strategies for numeracy, three aboriginal strategies, and 13 strategies for safe and caring schools. Secondary schools have an average of 11 literacy strategies, 10 for numeracy, four for aboriginal, and 15 for safe and caring schools.

For purpose of analysis, these strategies have been divided into twenty-four categories, some of which appear under more than one goal. The strategies include parental involvement/parent seminars/home programs; research—collect and analyze information; communication through website, newsletter, assemblies, etc.; and sharing information and collaboration with feeder schools. For example, the top five strategies for safe and caring schools were: a guide for schools; research—collect and analyze information; parental involvement/parent seminars/home programs; additional intervention, support, and resources for target students/differentiated instruction; and in-service teacher training/other forms of training. These top five strategies account for 47% of the strategies to be adopted in the elementary and
secondary schools. A list of the strategy categories and the criteria that define each strategy is in Appendix J.

The knowledge management taxonomy adopted in the examination of the plans focuses on the schools’ strategy statements of their respective plans. The strategy statements were coded by one of the four ‘Know How’ types: capture, implementation, dissemination, and sharing to facilitate the analysis of school strategies from a procedural perspective.

Capture strategies involved students' testing, survey administration, data collection and analysis, and tracking and using records. It also involves program evaluation and reporting. This category refers to all activities meant to build and enhance the knowledge information about students and school performance. ‘Implementation’ ‘ Know How’ includes strategies such as district-based and school-based programs that are established and used in schools, and activities that are designed and put in place for reaching district and school objectives.

Dissemination strategies consisted of events that happen at the boundaries of school-community, school-parent, and teacher-parent relationships. They include modalities to distribute to students information other than instructional, in other words, modalities to distribute information to students to promote school activities, to facilitate access to resources, and to reinforce conduct rules.

Sharing ‘Know How’ strategies include activities that take place within the community of educators, at the ministry, district, or school level. These strategies are meant to enhance the communication and sharing of information. Sharing strategies include in-service training, meetings, consultation, review and development, and professional support. Table 17 describes the number of strategies by the four ‘Know How’ types.
Table 17: Number of Strategies by ‘Know How’ Types

<table>
<thead>
<tr>
<th>‘Know How’ Types</th>
<th>Elementary</th>
<th>Secondary</th>
<th>All Schools</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture</td>
<td>268</td>
<td>58</td>
<td>326</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>18%</td>
<td>18%</td>
<td>18%</td>
<td>32%</td>
</tr>
<tr>
<td>Dissemination</td>
<td>180</td>
<td>59</td>
<td>239</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>12%</td>
<td>18%</td>
<td>13%</td>
<td>4%</td>
</tr>
<tr>
<td>Implementation</td>
<td>878</td>
<td>177</td>
<td>1,055</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>59%</td>
<td>54%</td>
<td>57%</td>
<td>40%</td>
</tr>
<tr>
<td>Sharing</td>
<td>17</td>
<td>35</td>
<td>209</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>1,500</td>
<td>329</td>
<td>1,829</td>
<td>72</td>
</tr>
</tbody>
</table>

Implementation ‘Know How’ dominates the school strategies followed by capture ‘Know How’, dissemination ‘Know How’, and sharing ‘Know How’. Secondary schools’ inability to capture data and information to improve student achievement may reflect their focus on implementation.

The make up of ‘Know How’ strategies across the five goals were relatively consistent. Fifty-eight percent of the strategies involved ‘Know How’ implementation strategies followed by 18 percent for capture, 13 percent for dissemination, and 11 percent for sharing ‘Know How’.

The top five ‘Know How’ implementation strategies involved safe and caring schools: a guide for schools; additional intervention, support, and resources for target students/differentiated instruction; reading 44; school-based math programs; and school-based reading programs.

Capture ‘Know How’ was dominated by ‘research - collect and analyze information’ (74%). ‘In-service teacher training/other forms of training’ was the largest strategy area in sharing ‘Know How’ (56%). Communication through the web site, newsletter, assemblies, etc., and parental involvement/parent seminars/parent home program strategies made up 62% of the dissemination ‘Know How’ activities.

In the examination of the plans, the knowledge management taxonomy ‘Know What’ focused on facts that schools deemed crucial when it came to triggering a search for new
solutions. There are a total of 500 measure statements associated with 371 objectives. Measures were associated with school plan objectives.

The proportion of schools that used at least one measure is set out in Table 18.

Table 18: ‘Know What’ Measure by Proportion of Schools

<table>
<thead>
<tr>
<th>‘Know What’ Measure</th>
<th>Elementary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>6%</td>
<td>50%</td>
</tr>
<tr>
<td>Canadian Achievement Test</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>Classroom Reading for Information</td>
<td>21%</td>
<td>0%</td>
</tr>
<tr>
<td>Code of Conduct</td>
<td>52%</td>
<td>63%</td>
</tr>
<tr>
<td>District Math Assessment</td>
<td>12%</td>
<td>38%</td>
</tr>
<tr>
<td>FSA</td>
<td>91%</td>
<td>88%</td>
</tr>
<tr>
<td>Gates</td>
<td>42%</td>
<td>75%</td>
</tr>
<tr>
<td>Kindergarten Numeracy</td>
<td>15%</td>
<td>0%</td>
</tr>
<tr>
<td>Other Evidence</td>
<td>52%</td>
<td>88%</td>
</tr>
<tr>
<td>Performance Standards</td>
<td>42%</td>
<td>25%</td>
</tr>
<tr>
<td>Provincial Exams</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>Report Card</td>
<td>15%</td>
<td>100%</td>
</tr>
<tr>
<td>Safe and Caring Schools</td>
<td>73%</td>
<td>25%</td>
</tr>
<tr>
<td>Satisfaction Survey</td>
<td>64%</td>
<td>75%</td>
</tr>
<tr>
<td>Test of Phonological Awareness</td>
<td>85%</td>
<td>0%</td>
</tr>
<tr>
<td>Transition Rate</td>
<td>0%</td>
<td>13%</td>
</tr>
</tbody>
</table>

The different ‘Know What’ metrics reflect the data or information readily available to the school or to be collected in 2003-2004. Foundation Skills Assessment was the most frequently used for measures related to literacy and numeracy. The test of phonological awareness was frequently used when establishing literacy baselines for primary schools. Satisfaction surveys were most frequently used as a metric to describe safe and caring school environments. An example of the components of the elements of the school plan construct is set out in Table 19.
<table>
<thead>
<tr>
<th>Goal</th>
<th>Goal Category</th>
<th>Strategy</th>
<th>Strategy Category</th>
<th>‘Know How’ Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve reading proficiency in students K-7</td>
<td>Literacy</td>
<td>in the Kindergarten classroom use lessons, games, activities, and interventions outlined in Firm Foundations</td>
<td>Firm Foundations</td>
<td>implementation</td>
</tr>
<tr>
<td>To improve the success rates in mathematics</td>
<td>Numeracy</td>
<td>provide appropriate in-service to teachers 3X/year</td>
<td>In-service teacher training/Other forms of training</td>
<td>sharing</td>
</tr>
<tr>
<td>To improve the success rates of aboriginal students K-7</td>
<td>Aboriginal</td>
<td>use homeroom attendance measures in September through November to identify students requiring immediate intervention</td>
<td>Attendance</td>
<td>capture</td>
</tr>
<tr>
<td>Endeavour to be more consistent in monitoring and applying the code of conduct</td>
<td>Safe and Caring School</td>
<td>More recognition for “good behaviour”, as per EBS.</td>
<td>Safe and Caring Schools</td>
<td>dissemination</td>
</tr>
</tbody>
</table>

This exemplar table shows a literacy goal with an implementation ‘Know How’ strategy to improve reading proficiency in students K-7. The numeracy goal has a sharing ‘Know How’ strategy to provide appropriate in-service to teachers three times a year. A goal for aboriginal learners has a capture ‘Know How’ strategy to use homeroom attendance measures in September through November to identify students requiring immediate intervention. The safe and caring school goal has a dissemination ‘Know How’ strategy for more recognition of good behaviour.

The ‘Know How’ examples in the table include the Firm Foundation and Effective Behaviour Support (EBS) service delivery models. ‘Know What’ elements are found with the measures appropriate in-service three times a year and homeroom attendance.
Overall, the North Vancouver District’s and schools’ ‘Know How’ efforts were dominated by implementation strategies (58%) followed by the capture of information (18%), dissemination (13%), and sharing (11%). The information captured related to student outcomes rather than teaching processes or the effectiveness of their implementation, dissemination, and sharing strategies. The provincial accountability policy has set the template for planning for improving student achievement and the NVSD plans have adopted and adapted the ministry’s accountability model.

The district and schools’ goals, strategies, and measures framed the strength of the district knowledge management practices and revealed the challenges education leaders face in the contested environment they work in. The district and ministry appeared indisposed to directly addressing educators’ responsibilities for possessing and using a broadly shared and constantly updated curriculum, and subject and pedagogical knowledge; and for these educators to work collaboratively with other educators and staff. The ministry and district emphasis was on the important leadership steps of connecting data and practice dots to improve student achievement.
Chapter 7  The NVSD Working Knowledge Management Practices

The survey, district and school plans, and interviews together paint a picture of North Vancouver’s knowledge management practices. The following section looks at the educators’ views on knowledge management practices in relation to policy and strategies; leadership; incentives; knowledge capture and acquisition; training and mentoring; and communications. Their views are also discussed in terms of the taxonomy of knowledge: ‘Know Why’, ‘Know How’, ‘Know What’ and ‘Know Who’.

‘Know Why’  What causalities are at the core of the dominant models applied by the NVSD educational leaders?

The School District and School Knowledge Management Practices survey asked the educational leaders about (thirteen) reasons for using management practices (Appendix K). Their top three responses were: 1) to improve student achievement; 2) to improve efficiency by using knowledge to improve teaching and learning processes; and 3) to help integrate knowledge within the school or school district. The educators said that improving student achievement in their school or school district was a critical reason to use knowledge management practices; in fact no one found this reason of little importance. The increase of the efficiency of educators by using knowledge to improve teaching and learning processes placed second as a critical reason to use knowledge management practices. The district’s Reading Policy (Appendix K) sets out a clear articulation of ‘Know Why’. It says:

The ability to read, with proficiency, is the most important prerequisite to success at school. The ability to read proficiently allows learners to take the fullest advantage of the program opportunities they are provided in schools. The ability to read is fundamental to success in all educational programs. Reading is best taught through comprehensive and balanced reading programs that are research-based and that combine skill development and literature-based activities.

North Vancouver’s education leaders also put forward a rich collection of mental models to guide their school improvement activities in the district’s 2002/2003 strategic framework.
document. There they talk about “mindsets” that will influence the rate, scope, and nature of change in public education in the immediate future and shape the rate, direction, and character of local and provincial educational policy development. Three of these principles were: 1) the need for public education to be responsive, effective, and efficient; 2) the need for public education to document, in terms of student outcomes, the value received for the money it spends; and 3) the need to adopt governance, leadership, and management practices that ensure that the needs and requirements of students and parents come first.

The 2002/2003 strategic (NVSD, 2002) plan also talked about an increasing awareness that a child’s success at school will be determined by their development during the first five years. This awareness has resulted in expectations for pre-school programs to prepare children for school, for linkages between schools and such programs, and for locating various social services in schools. The strategic plan identified changing conceptions of teaching, learning, and what is worth learning; shifts from acquiring information in classroom contexts to that of constructing knowledge; learning how to learn; and locating, using, and applying knowledge in a variety of contexts, settings, and situations. From an instructional perspective, the district mental model emphasizes performance standards and not simply content coverage. Performance standards are professional judgments of a significant number of BC educators about standards and expectations for the numeracy, reading, writing, and social responsibility foundation skills.

The North Vancouver model is built around ambitious (stretch) goals, deliberate plans and strategies; new ways of linking learners with programs; accountability systems tied to goals; trained and supported teachers; and teamwork and distribution of leadership. The district’s instructional map has as its foundation in Sizer’s (1984) student performance model, the triangle of learning that focuses on the inter-relationships between learner, teacher, and the curriculum. The North Vancouver model is illustrated in Figure 11.
A district educator described the triangle of learning as "...there are just programs, students, and their teachers and that’s what an educational system is. Reform or improving student achievement is basically trying to optimize or make better each of those three." The district’s learning triangle reflects an understanding of students, teachers, and these three relationships – student and curriculum; teacher and curriculum; and student and teacher.

The student dimension of the triangle of learning includes social capital, readiness to learn, and capacities to learn; the teacher dimension covers repertoire, understanding learning, attitudes, and expectations; and subject matter involves relevance, sequence, rigor, and accessibility. The student and subject matter relationship centers on: reading skills/strategies, critical thinking skills, making connections, locating information, and applying knowledge in a variety of contexts. The teacher and subject matter connection reflects teacher knowledge, size of the “gap” modification and adaptation, and assessment practices. The student and teacher relationship covers classroom management, diagnostic skills, assessment literacy, and the ability to individualize. These mind-sets, strategies, and the triangle of learning, reflect some of the ‘Know Why’ world for this school district.
‘Know What’ What facts are crucial when it comes to triggering a search for new solutions?

The school and district plans point to a rich repertoire of facts in the 500 measure statements related to the 16 distinct measurement instruments (Table 20) included in their district and school plans.

Table 20: The Number of Measures by District and School Types

<table>
<thead>
<tr>
<th>Measures</th>
<th>Elementary</th>
<th>Secondary</th>
<th>Total</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Canadian Achievement Test</td>
<td></td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Classroom Reading for Information</td>
<td>7</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Code of Conduct</td>
<td>21</td>
<td>6</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>District Math Assessment</td>
<td>7</td>
<td>5</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Foundation Skills Assessment</td>
<td>94</td>
<td>27</td>
<td>121</td>
<td>6</td>
</tr>
<tr>
<td>Gates McGintie</td>
<td>19</td>
<td>8</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>Kindergarten Numeracy</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Other Evidence</td>
<td>50</td>
<td>42</td>
<td>92</td>
<td>0</td>
</tr>
<tr>
<td>Performance Standards</td>
<td>27</td>
<td>2</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Provincial Exams</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Report Card</td>
<td>13</td>
<td>23</td>
<td>36</td>
<td>1</td>
</tr>
<tr>
<td>Safe and Caring Schools</td>
<td>41</td>
<td>3</td>
<td>44</td>
<td>3</td>
</tr>
<tr>
<td>Satisfaction Survey</td>
<td>37</td>
<td>12</td>
<td>49</td>
<td>1</td>
</tr>
<tr>
<td>Test of Phonological Awareness</td>
<td>33</td>
<td>0</td>
<td>33</td>
<td>2</td>
</tr>
<tr>
<td>Transition Rate</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>358</td>
<td>142</td>
<td>500</td>
<td>19</td>
</tr>
</tbody>
</table>

These metrics reflect a mix of data made available by the provincial government and district-led fact-finding. The plans focus on outcomes and not instructional processes or student engagement.

Educators identified knowledge management practices as critical to improve student achievement in the school or school district. The overall context of how data and information
was used in the district before the district and school plans developed was described by an educator thus:

There hadn't been a serious amount of use of data to inform instruction or practice...other than more of a quick glance holistic review. So looking at performance on government exams, looking at the sporadic things that would come in occasionally that would cause us to, or survey results that would come out from outside organizations, looking at student populations in various ways.

District leaders are also aware of the limitations they face in terms of information capture and analysis. As one educator put it:

Until the district has the capacity to generate the information in a do-able, sustainable fashion, there is a degree of comfort in taking the informal assessment tools as well as some of the formal. And say, yeah, we're okay on this course but we're going to be able to demonstrate soon, so I can give myself latitude to not get in a knot of not being able to.

In the survey, educators also expressed a preference towards capturing and using knowledge obtained from public research institutions including universities and government ministries, and encouraged educators to participate in project teams with external experts (Table 21).

Table 21: Knowledge Capture and Acquisition

<table>
<thead>
<tr>
<th>Knowledge Management Practices</th>
<th>Know How</th>
<th>In Use since 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captures and uses knowledge obtained from other schools and school districts</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Captures and uses knowledge obtained from public research institutions including universities and government ministries</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Dedicates resources to detecting and obtaining external knowledge and communicating it within the school or school district</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

The district does from time to time obtain knowledge from public research institutions on specific issues. One educator described it as:

But the aspect of using research and best practice as the foundation for how we conducted ourselves was always present for as long as I can remember. North Vancouver is developing a repertoire of “facts” that could trigger changes in practice and was part of
the culture, so in other words using research as to what is the best practice of teaching writing, what is the best practice of reading and those things were common.

Another educator explained the context for their use of research as:

We began the development of using research to develop our Reading 44 program. It was based on best practice, but how did we know it was making a difference? So that kind of thinking was formulated in doing that because we felt, we knew, well, we thought we were on the right line, but how do we substantiate that it is making a difference in the schools that had instituted it, and we began to look at that as a ways and means of monitoring.

An example of research collaboration is the longitudinal study by Dr. Linda Siegel of The University of British Columbia with Kindergarten children in the NVSD studying the effectiveness of systemic screening assessment and early intervention for those students found to be at risk in learning to read. The study involved testing children in language and memory skills, and revealed that 25 percent of Kindergarten students with English as their first language were at risk of being unable to achieve reading proficiency, while up to 40 percent of Kindergarten students with English as their second language were “at risk”. The district wanted to see if there was a way to identify Kindergarten students who might have difficulties so they could provide intervention before the children started to read and the problems became serious.

District staff do liaise with different provincial ministries to try and see what resources may be available to the district. In the survey, educators indicated that their knowledge management practices were not very effective at increasing the capture of knowledge from public research institutions or from other school districts, associations, research literature, etc., nor were they considered effective for relations with learners and parent client orientation.

The level of external knowledge management practices may also reflect a perception that there is little knowledge to be obtained from public research institutions, including universities and government ministries. At the same time, there is no person in the district who is dedicated to detecting and obtaining external knowledge and communicating it within the school or school district.
'Know How' Refers to skills, i.e. the capability to do something

The NVSD has 1,000 teachers teaching 18,000 students in 45 locations. Hargreaves (2000, 3) argues that “successful schools, like successful businesses, have to learn how to use to the full the intellectual capital trapped in the heads of their members. Many teachers are inventive and innovative improvisers, but that knowledge is never captured and made part of the school’s collective knowledge-base.” One educator reflecting on the district’s early initiatives said:

We were looking at instructional practice to enhance student learning, but we had no idea what that student learning would be, we weren’t looking at measuring student learning, really. And even if we did measure it, we were managing the data because nobody ever really got behind it.

The integration of knowledge within the schools or school district placed second in the survey as a critical reason to use knowledge management practices. Knowledge from sources outside the school or school district and relationships with third parties was less valued. North Vancouver’s service delivery model is the district’s present vehicle for capturing and integrating knowledge and making it part of the district’s collective knowledge base.

The Reading 44 service delivery model was constructed to meet the school district’s goal to ensure all students have the ability to read proficiently. This service delivery model was designed, developed, and implemented by teams of North Vancouver teachers. An educator explained the model as “the way you put it together is the interaction, like the interaction between the student and the teacher that became the service delivery model Reading 44.” Reading 44 outlines a classroom reading program for all students K-10. The purpose of this model is to help teachers use the knowledge available about the teaching of reading in their everyday classroom practice. Reading 44 is built around twelve reading strategies and instructional activities and graphic organizers for the classroom. A North Vancouver colleague explained that it “involves a lot of people to get a service delivery model. So when you have got
a service delivery model, you have something to disseminate; you have a way of communicating knowledge; it's the service delivery model; you have a way of implementing.”

The service delivery model is also a mental model for district knowledge management. It encourage teachers to provide more critical input into the process of knowledge enhancement (Reading 44); implementing more knowledge-related training for teachers; and making decisions based on the analysis of data from assessment results, lessons learned, and best practices.

Another characteristic of the mental model was feedback. As one educator described it:

We had to create the feedback cycle because it didn’t exist and the structure existed within the accreditation, but it was generally well received because it caused us to look at ourselves and question what we were doing, should we continue to do it or not. Was it making a difference?

The district believes that early identification/intervention for literacy, teaching reading, and reading in the content areas will improve students’ literacy levels. In the area of mathematics, they judge that emphasizing early numeracy, Grade 7/8 transitions, and participation levels at senior levels will have positive outcomes for their learners. The district sees improving success rates of aboriginal students will flow from emphasizing reading and numeracy, school completion, and school attendance. They also take the view that accountability contracts, school plans, district reviews, and data propel the teaching and learning that are important. An educator, in discussing practical knowledge management, made the point that “collecting all this data and using the data is not getting in the way of implementing Reading 44.”

The district considers that curriculum materials and assessment instruments developed for teachers, by teachers, and field tested in classrooms will lead to significant results. Their belief and knowledge system can best be found in a variety of curricular and instructional strategies. The district assembles writing teams of local professionals to produce curricular and instructional resources that will enhance instructional practice. Current examples of this activity include resources for mathematics, reading, French as a second language, elementary report cards, new
graduation requirements, and Individual Education Plan and Secondary Learning Centre Programs. Math 44: Comprehensive resource packages have been produced to assist teachers with effective planning and instruction in mathematics, Grades 1-9. Math Intervention Handbooks: District-wide, curriculum-based mathematics assessments in Kindergarten, Grade 6, and Grade 8 have identified curriculum strands at these grade levels which will require direct instruction. Reading 44: A second edition of Reading 44 features significant enhancements to teachers' resource packages at the primary, intermediate, and secondary levels. Revisions have been based upon feedback from classroom teachers. The French as a Second Language Handbook (FSL) for teachers called upon to teach French as a Second Language in Grades 5-8 features direct references to the Integrated Resource Packages at each grade level. The FSL Handbook offers links to commonly available FSL textbooks and resource packages. Elementary Reporting: Additional comments have been added to the NVSD's online elementary report card. Based on the language of provincial performance standards, these comments will assist teachers with the crafting of relevant and accurate elementary report cards. Comments relevant to students in ESL and intermediate French Immersion classes are now available to teachers across the district.

New Graduation Requirements Portfolio Pilot Project: Program materials have been generated to assist with a NVSD pilot project that relates to the new provincial graduation requirements. Special Education: IEPCentral, a new online Individual Education Plan (IEP) system is in the final stages of testing, with a pilot project underway in the Carson Family of Schools. Secondary Learning Centre Handbook: Guidelines for establishing or enhancing effective Secondary Learning Centre Programs are featured in this handbook. The handbook explores desirable long-term learning outcomes for students with learning difficulties. In addition, it details the program design features that will best meet student needs, both in the learning centre and the regular classroom.
The triangle of learning underlies all these ‘Know How’ initiatives. An educator asserted that:

reform or improving student achievement is basically trying to optimize or make better each program, student and their teachers. The way you put it together is the interaction, like the interaction between the student and the teacher that became Reading 44. That’s what guides me....

The centrality of teacher quality is at the heart of the triangle of learning and their service delivery models.

‘Know Who’ involves information about who knows what and who knows what to do.

In North Vancouver, educators looked to principals and school district senior staff to be responsible for providing knowledge management leadership. One educator described North Vancouver’s district culture as being always mindful of “…protecting people’s time so that we can focus on learning and knowledge management, that’s its not just not about all the other tasks that come at you. I know that is a frustration at the school level....” These educators believed that their corporate culture or value system encouraged knowledge sharing, and six out of 10 acknowledged that there were policies or programs in place that were intended to improve worker retention. At the same time, there is recognition in the district that:

(there is a loose network of individuals who are considered to be experts. We have not documented effectively to say, if there are particular areas of expertise that you could draw upon, this would be the person. It is informal. Even when we talk about heading up a committee or a structure, we will bounce names around without having a bit of a profile and say, here is someone we should really draw upon.

North Vancouver educational leaders articulate their understanding of knowledge management in different ways.

The educator survey (Table 22) indicates that the educational leaders saw the effectiveness of results for using their existing knowledge management practices were most problematic in relation to improving educator efficiency and/or effectiveness. This was closely
followed by the “somewhat effectiveness” of increasing knowledge sharing across departments or schools or grades.

### Table 22: Effectiveness of Results for Using Knowledge Management Practices

<table>
<thead>
<tr>
<th>Effective Results</th>
<th>‘Know How’ Type</th>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not at All Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased our knowledge sharing horizontally (across departments or schools or grades)</td>
<td>Sharing</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Increased our knowledge sharing vertically (up the organization hierarchy)</td>
<td>Sharing</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Improved educator efficiency and/or effectiveness</td>
<td>Implementation</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Improved skills and knowledge of educators</td>
<td>Implementation</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

A similar challenge was identified when the educators responded to the question on the number of knowledge management practices in use and the proportion of them that were recently adopted – users of knowledge management practices. The positive responses identified recent practices such as: regularly updating databases of good practices, lessons learned or lists of experts, and explicit criteria for assessing educator performance. When the educators were asked what groups resist implementation of knowledge management practices, their responses highlighted unions active in the workplace, non-management educators, and secondary school departments.

The focus on improving student achievement is impacting on how districts approach the sharing of knowledge. Today, this district approaches sharing through the use of service delivery models offering common language and common learning opportunities. An educator described Reading 44 and Math 44 as “…common practice, and it doesn’t mean that I do it the same way;
it means that we have a foundation if you like, that you have a framework that we’re all working on, so we can talk about it to each other and talk about whether or not it’s working.” Another colleague pointed out the importance of research and evidence in relation to supporting the sharing of knowledge. An educator talking about the impact of ‘Know Who’ on ‘sharing’, cites Dr. L. Siegel’s research – “she knew the sciences, so no one could say: she doesn’t know what she’s talking about, and yet even though she knew the science, she had talked to teachers about what had actually gone on, what had actually happened. So then it became OK to talk…” about Reading 44.

Sharing of knowledge and information is also led by the district educators. The need to share is recognized by NVSD leaders. As one of them put it:

So as a system you don’t want pockets of brilliance, you want the whole organization to be performing at the highest level possible and therefore we had to find a way...to communicate, to train, to in-service what our best teachers had and apply it across the system.

The district’s assistant superintendents consciously stimulate the sharing of education practices at meetings of their families of schools and principals’ meetings. The assistant superintendents also report at each other’s family of schools meetings. An example of sharing was described as:

...at a principals’ meeting, they would have to print out their annual growth plan, right. So those are put together and they are shared amongst each other as to what they are doing. And so there is that component, the principals, the zone (meetings) with the superintendents when they set up their individual meetings with the principals, about the principal’s goals for the upcoming year and how it is linked to the school growth plan; ...and what do they need to focus on in terms of achieving it.

A by-product of what the district leaders refer to as committee work is actually formal sharing in the district. For none of the educators was developing their organizational memories through documentation (or codification of knowledge) a new practice. At their principals’ meetings they “...draw out examples of what ...(they)...would see as good practice: that people would be able to share, and reinforcing that that’s an appropriate thing to do and we should be willing to share out good practices.” Knowledge sharing in the district flows from being rational. The character
of knowledge sharing in the district reflects a meta-cognitive model. The educators emphasize functional requirements and best practices and identify where they are. At the same time, however, classroom teachers were perceived as less involved in knowledge management.

Knowledge sharing in the district was not seen in the survey as improving educator efficiency and/or effectiveness. One principal, in describing their experience with a pilot program, said, "(n)ow that it does this, who can I go to and say, this is what we found, and did you find the same thing? What did you do? Why was your work interesting? To me, that is sharing of knowledge." Neither did their sharing practices prevent duplicate research and development. Another educator described their sharing as:

Well, it is probably not as systematically done that way, but more of a cumulative ad hoc. A series of events are eventually pulled together and looked at. And then it's sort of like an "ah ha." This is what we've learnt so it's testing assumptions, so the pilot's become a part of the huge feed-back group, of which include both teachers and administrators, that feed back to the initial steering, the implementation team that runs with these types of learning, and it's continually modified and adapted and then the pilots are expanded, so then you expand to the second level of pilots that have already incorporated some of those applications in the schools.

Communication practices were addressed in the survey in terms of school or school district educators sharing knowledge or information. Ten of 11 educators identified the communication practice of preparing written documentation such as lessons learned, training manuals, good work practices, and articles for publication. The third and fourth least popular practices for knowledge sharing and transfer were encouraging educators to continue their education by reimbursing tuition fees for successfully completed work-related courses; and regularly updating databases of good practices lessons learned or lists of experts.

Sharing of “practice” is significantly facilitated by technology. Information Communication Technology (ICT) is providing an open and transparent environment. An educator described district ICT activity as:

When we provide something to people, then we provide it to everyone. We are trying to provide them with models or templates and saying, here is something we believe that
could help *(them in their practice)*. The intent is that if we find something that works well that we should share it with others. So there will be times when we put out something, someone will come back with how they have modified it and then we will reinforce that and say, that’s great, and could we use that together as a district model.

The use of email and the NVSD web site for sharing practice is growing in the district. The educator who talked about how district ICT makes data and information argued that “…more readily available or easier access to shared material is something we’ve tried to do.”

Knowledge management practices were considered most effective for knowledge sharing, improving adaptation of programs or services to learner requirements, and improving district or organizational memory. The most effective result of using knowledge management practices identified by the educators was improving worker skills and knowledge (88%). The second most effective outcome identified was increased worker efficiency and/or productivity.

However, explicit criteria for assessing educator performance and written knowledge management policy or strategy was the least popular knowledge management practice, with only two respondents identifying these practices. It is interesting to note that having and requiring good documentation and making these materials available is recognized as being vital to maintaining high-quality work standards (Field, 2001). Accessing the lessons learned by others, as well as good work practices, help to prevent organizations from repeating errors while allowing new project teams to build on the work of their predecessors (Dixon, 2000; Baird, Deacon, & Holland, 2000).

The analysis of the position descriptions for the Superintendent of Schools, Assistant Superintendents, Principals, Vice-Principals, and District Principal – Program Services offers another perspective on leading change and managing knowledge management practices. In the area of sharing knowledge, the North Vancouver position descriptions emphasized upward communication. Table 23 sets out examples of duties related to sharing knowledge.
### Table 23: Sharing Knowledge (Fullan)

<table>
<thead>
<tr>
<th>Position</th>
<th>Sharing Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendent of Schools</td>
<td>Ensures the Board is kept fully informed of the operation of the school system and provides such information and reports as the Board may require</td>
</tr>
<tr>
<td>Assistant Superintendent – West Zone</td>
<td>Shares with the Assistant Superintendent – East Zone – in arranging and conducting meetings of principals, school and district staff as may be required.</td>
</tr>
<tr>
<td>Assistant Superintendent – East Zone</td>
<td>Shares with the Assistant Superintendent – West Zone – in arranging and conducting meetings of principals, school and district staff as may be required.</td>
</tr>
<tr>
<td>Principal</td>
<td>Reports regularly and as necessary to the Assistant Superintendent regarding significant activities within the school, and provides such other information as may be required by other School District personnel.</td>
</tr>
</tbody>
</table>

The sharing of ‘Know How’ activity is not reflected in the job descriptions. No examples were found of Kotter’s change management criteria: empowering others to act on the vision; planning for and creating short-term wins; or institutionalizing new approaches.

Table 24 sets out the activities found in the job descriptions related to consolidating improvements.

### Table 24: Consolidating Improvements (Kotter)

<table>
<thead>
<tr>
<th>Position</th>
<th>Consolidating Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Superintendent – East Zone</td>
<td>Ensures that schools of the zone are provided, within the available budgeted funds, with appropriate instructional materials, minor renovations, equipment, and services.</td>
</tr>
<tr>
<td>Department Head - Secondary</td>
<td>Seeks, through conference and consultation, improvement of the quality of instruction of the department.</td>
</tr>
</tbody>
</table>
Kotter’s argument about consolidating improvements and producing still more change is found to a limited degree. There were no examples in the position descriptions capturing Kotter’s criteria for leading change through institutionalizing new approaches.

Elmore’s principle of mobilizing people in the service of instructional improvement was not evident in the position descriptions. The references to mobilization of employees focused on personnel matters. There were no criteria in the descriptions relating to instructional change as a long, multi-stage process. Elmore’s focus on system-wide improvement could be found in relation to technology implementation and personnel evaluation but not instruction. The concept of shared expertise as the driver of instructional change was not referenced in these positions.

This position description analysis may reflect the labour management environment in school districts and schools and the present state of the instruction of supervision culture coupled with views about professionalism found in public education in British Columbia.

The mixed methods used in this study required convergence, corroboration, and correspondence of results from the different research strategies – observation, document review and analysis, interviews, and survey. The ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ Organizational Knowledge Profile provides an umbrella schema to examine the results of the mixed methodologies. A triangulation of the mixed methodology results is set out in Appendix P.

Provincial policy documents and the district and school plans all underlined an emphasis on ‘Know What’. The provincial policy documents and interviews also drew out the challenge educators face in sharing knowledge. Provincial policies and the school district plans and the educators themselves all emphasized knowledge of student results and improvements.

The educator survey indicates that the educational leaders saw the effectiveness of results for using their existing knowledge management practices were most problematic in relation to improving educator efficiency and/or effectiveness; and in relation to the effectiveness of
increasing knowledge sharing across departments or schools or grades. The North Vancouver job description analysis underlined how sharing of ‘Know How’ is not an explicit dimension of their work.

The observations, document review and analysis, interviews, and survey also indicate that educational leaders have limited access to robust evidence about the triangle of learning. Ministry of Education policies appeared to buffer teaching and learning from examination. Ministry policy documents and statements emphasize the monitoring of student achievement and not pedagogical or student engagement information. When NVSD educators did have access to instructional evidence, the case study indicates that they face significant systemic obstacles in translating and sharing working knowledge into effective teaching practices.

The case study indicates that school district and school educators rely on Ministry of Education school-level aggregated information for a large amount of their school-level information. Even though they are becoming more aware that data has some importance, NVSD educational leaders do not yet have the capacity to store student life-story information or produce timely reports about instruction, student engagement, and student progress. The interviews and survey in the North Vancouver School District indicate more educators are learning to speak the same language. They are involving a wider range of educators instead of just instructional project teams. As one educator said, “...there’s a communication as to the meaning of the data which is evident.” However, the job description analysis indicates that in the area of sharing knowledge, the NVSD emphasizes upward communication.

The case study also illustrates that the ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ Organizational Knowledge Profile can provide an umbrella schema to examine Ministry of Education, school district, and school polices and practices. The educational leaders in North Vancouver are beginning to collect information and provide information about curriculum, instructional practices, policies, and student background and attitudes. When
educators do gather such information, they do not yet have a significant capacity to analyze it and disseminate the 'knowledge' in a comprehensive manner that supports schools, teachers, administrators, students, and parents. Classrooms, schools, and school districts in British Columbia and elsewhere are workplaces operating in a society where we are changing from industrial to what many call the knowledge society. These school workplaces also should be caught up in courses of action shaped by our transformation from an industrial to knowledge-based economies.

One way to understand the district’s knowledge management repertoire is to examine what knowledge is or is not being produced, acquired, or disseminated in the organization. This case study looks at the district’s knowledge management incorporating Lundvall’s knowledge typology ('Know Why', 'Know What', 'Know How', and 'Know Who'). The study also integrates four forms of ‘Know How’ reflecting the district’s sense of this activity: capture, implementation, dissemination, and sharing. These taxonomies set out a structure for the examination of North Vancouver’s nascent and mature knowledge management activities. This case study explores these concepts by analyzing North Vancouver’s district and school plans, though interviews with their educational leadership and reviewing district and provincial documents. I believe an organization knowledge profile can offer a practical schema (Table 25 below) for exploring school districts’ working knowledge practices.

Table 25: Organization Knowledge Profile

<table>
<thead>
<tr>
<th>‘Know Why’</th>
<th>What causalities are at the core of the dominant models applied?</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Know What’</td>
<td>What facts are crucial when it comes to triggering a search for new solutions?</td>
</tr>
<tr>
<td>‘Know How’</td>
<td>Refers to skills, i.e. the capability to do something</td>
</tr>
<tr>
<td>‘Know Who’</td>
<td>Involves information about who knows what and who knows what to do.</td>
</tr>
</tbody>
</table>
The NVSD documents and interviews paint an interesting story of the ‘Know Why’ that underpins their efforts at instructional leadership. This framework is made up of the six points of intervention, service delivery model, and education information initiatives. Each of these components is at different stages of development and maturity.

The district’s knowledge management stories reflect a strong understanding about the importance of ‘Know What’. They are willing and able to articulate what they believe the causalities are at the core of the dominant leadership and teaching and learning models applied at the general level and in specific areas (reading and numeracy).

‘Know How’ is the dominant element of the district’s knowledge management activities. The district and school plans contain over 1,856 strategies, a rich vein of ‘Know How’ activities.

North Vancouver’s education leaders are working with available data as triggers in identifying problems and instructional solutions to improve student achievement. As one educator put it:

We know for what purpose the data is gathered. Well, initially I think that was the first step of the learning curve because it was sort of viewed that this data is being done for ministry purposes, accountability, serving the Fraser Institute, and we’ve gone beyond that to: we need these data for our purposes regardless of whether the ministry were to cease to gather it. So for what purpose was it done, part of the accountability process, the forced conversations that would occur as results of what the data and interpreting the data. We’ve shifted from ministry purposes which still exist that add some leverage to the continuity of it based, when you have a lot of different balls in the air, to wanting it. And I think that’s a forum....

The 507 measures in these plans indicate a large part of the character of the ‘Know What’ universe preferred by the schools and district and shaped by the data and information available to them.

Like the majority of school districts, the information about who knows what and who knows what to do – their ‘Know Who’ universe – is the least developed of their knowledge management regime. Perhaps this reflects the fact that school districts, like many organizations,
have an “asking problem” not a sharing problem. Perhaps when educators ask more often, the sharing problem will be moot.

In the NVSD, knowledge management is beginning to influence their efforts to move towards the systematic generation, capture, and dissemination, as well as sharing and promotion of knowledge to support the improvement of student achievement. This district has taken a variety of steps in adding to their understanding and responses to a knowledge management agenda.

The North Vancouver 2003 strategic plan (NVSD, 2003) now identifies increasing demands upon the information/data gathering and data analysis capabilities of schools and school boards as a significant trend for school district planning. The district (NVSD, 2003) has also set as one of its curriculum and instruction priorities for 2003/04 a data warehouse for the compilation, storage, retrieval, and display of student achievement data. A September 23, 2003 email from the district to the author captures the richness of their understanding. The email describes the district’s business practice as it relates to their management of student information and says:

We need to map out our process for TOPA; math assessment; aboriginal attendance; aboriginal Gates; safe and caring schools; and CCAT. We need to generate templates that would enhance data quality and make the work of clerical staff easier; determine what reports need to be queried out of SASI - what should be handled centrally; determine what standard sets of reports need to be establish for District / for schools - what format would these report follow - capacity for longitudinal reports; and what software would we use to generate school and district reports. The new MIS system has report generating capacities. Should the student information system use the same software to reduce training requirements? In addition we have work related to central student registration.... We saw this as phase 1 recognizing that the use of these reports (knowledge management) to influence District priorities and support to schools / to inform instructional practice in classrooms and monitor progress of cohorts and individuals longitudinally are concurrent needs - start small -- think big.
A September 2003 note about subsequent reporting captures the character of their knowledge management discourse. The document describes the discussion as follows:

... on standardized versus district developed assessments; what do we actually measure when we test students; how good are the tests, what do they tell us; what is the purpose of testing if no intervention follows; and how do we assess that some implemented programs are good. We discussed about the time series for various measures and everybody was happy to have the data in the final report, but very often the discussion turned toward the need for cohort analysis (how can we decide an implemented program was good and effective if we don't measure somehow its effect on the same cohort? how do we account for progress?

These examples illustrate how knowledge management can play a role in enhancing school district and schools' organizational practice, program implementation, and teaching and learning.

This case study identifies a wide range of knowledge management activities in the NVSD. They were embedded in the district and school plans and other district documents. The knowledge management activities identified in the survey results and interviews with the district leadership team reflect the educators' mix of values, practice, background information, and professional insight. The district's activities ranged from an explicit leadership/change model to emergent student information data capture standards (Record Keeping 44). North Vancouver has a rich selection of knowledge management practices with their performance plans, school plans, the six points of intervention instructional philosophy, and service delivery models. The district knowledge profile can offer them a tool to assess where they can improve.

Examining an education district's knowledge management practices can inform policy and practice for improving student achievement. Knowledge management is a useful tool to look at current provincial, district, school, and classroom activities. Mapping one's knowledge management territory in a framework built on the centrality of instruction and change management can be a useful tool to inform policy and practice. The focus group mapping the questions (Figure 4) - Where are we at?; How do we know?; Where do we want to go?; What do

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we need to know?; How do we get there?; How do we assess our progress?; and How do we
share our learning? – can inform the status of an organization’s knowledge management
practices at any level. The NVSD has made progress in its efforts to address these questions. The
interviews and conversations I had with district educators leads me to believe that the district is
moving from a place and time where instructional quality was assured through introducing new
curriculum and educators’ individual commitments to and responsibility for student achievement
to a world where quality is meant to be assured through district and school planning of student
achievement expectations. The district is not yet near the ultimate position where its educators
would enjoy a widely shared and continually updated subject and pedagogical knowledge base.

This case study also informs an understanding of working knowledge management
practices in one specific setting with a view to expanding our knowledge. Every school district
leadership team has a repertoire – a set of skills, devices, or attributes. The repertoire of
education leaders in North Vancouver reflects a change management strategy (Kotter, 1996), a
philosophy of education reflected in "the triangle of learning" and the six points of intervention
plus structural changes – the relationship between students, teachers, and the curriculum (Sizer
1984, Muncey & McQuillan, 1993); and service delivery models to improve and facilitate
student achievement. In addition, the district adopts and adapts the government’s accountability
processes to focus on strengthening the triangle of learning activities. The district is moving
along a path that initially emphasized awareness and planning, and has arrived at a focus on
outcomes. One educator reflected on this voyage and said:

In retrospect, with what I know about implementation now, we were only dealing with
the awareness, we weren’t going anywhere beyond the awareness level, of
implementation. And then we’d get into planning, but we weren’t planning for, we
weren’t planning for student outcomes...we were planning for teacher in-services. But it
wasn’t related to student outcomes; it was related to instructional strategies. Which is not
a lot, and I mean, we are still some of that because we knew that that works. But...we
weren’t looking at how students were doing in classrooms, really.
The North Vancouver district has moved along a school improvement path where the starting point was curriculum as product. The next stop on their route was discourse. As one educators explained, “we need to explore the product; we need to un-pack socialization or common language.” They have now arrived at a point where the district is beginning to include practices of knowledge creation and acquisition, knowledge dissemination, and knowledge use.

Fullan’s (2003) core competencies for managing change: 1) attending to a broader moral purpose; 2) keeping on top of the change process; 3) cultivating relationships; 4) sharing knowledge; and 5) setting a vision and context for creating coherence in organizations are also reflected in NVSD school and district planning. Knowledge management often begins with the district facing a problem. It is useful to examine North Vancouver and Elmore, Fullan, and Kotter’s rubrics for managing change and Lundvall’s innovation typology when they address a problem (Table 26).
### Table 26: Innovation Rubrics for Managing Change

<table>
<thead>
<tr>
<th>Theory</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lundvall</strong></td>
<td><strong>Fullan</strong></td>
</tr>
<tr>
<td><strong>‘Know Why’</strong></td>
<td>Attending to a broader moral purpose</td>
</tr>
<tr>
<td><strong>‘Know What’</strong></td>
<td>Setting a vision and context for creating coherence in organizations.</td>
</tr>
<tr>
<td><strong>‘Know How’</strong></td>
<td>Communicating the vision. Establishing a sense of urgency</td>
</tr>
<tr>
<td></td>
<td>Cultivating relationships</td>
</tr>
<tr>
<td></td>
<td>Empowering others to act on the vision</td>
</tr>
<tr>
<td></td>
<td>Planning for and creating short-term wins</td>
</tr>
<tr>
<td></td>
<td>Keeping on top of the change process</td>
</tr>
<tr>
<td><strong>‘Know Who’</strong></td>
<td>Sharing knowledge</td>
</tr>
</tbody>
</table>
The perspectives for change in Table 26 illustrate a sequencing of actions. Lundvall’s typology of ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ offers important anchor concepts for managing change. It is critical, I believe, to start with a clear understanding of ‘Know Why’ for any change management process or project to succeed.

Examining change management practices may be useful in bridging the conversation between Fullan’s (2003) core competencies and the contested roles of principals and teachers. Many of Fullan’s core competencies are being addressed by the educational leaders in the NVSD. The district has a clear moral purpose to ensure that each learner has opportunities to succeed in a challenging educational program. The NVSD appears to be actively moving towards adopting models of teaching, learning, and shifts from acquiring information in classroom contexts to that of constructing knowledge, learning how to learn, and locating, using, and applying knowledge in a variety of contexts, settings, and situations. The NVSD educational leaders emphasize the critical importance they give to cultivating and sustaining positive relationships inside the district with their fellow educators and staff. The examples drawn from Elmore and North Vancouver give one an idea about their fit in the Fullan/Kotter change management paradigms. The NVSD has married a philosophy of change management with a stated focus on instruction: what teachers do, how teachers organize for instruction, how teachers interpret curriculum, and how individual differences are accommodated. One can find examples of strategies and measures related to instruction in the district and schools’ plans. Reading 44 and the service delivery model concept reflect an instructional strategy where instruction is carefully planned; and that instructional strategies reflect defensible principles of learning. The instructional focus of the NVSD emphasizes that instructional time be effectively used. Attention to strategies and measures in relation to instruction is evident in many school plans. However, it is not yet a systematic component of the NVSD’s knowledge management practices.
The district has created opportunities for educators to create new knowledge and to turn that knowledge into new practice. The district’s service delivery models are the vehicle for creating common knowledge and leveraging common knowledge across classrooms and schools. One educator described their service delivery model as “Common language, that’s the way. It is common language and common learning.”

The question that stands out in this case study is how NVSD educators share knowledge. Most teaching and learning occurs in the classroom. A knowledge management approach stresses, however, that teachers do not improve practice and outcomes or innovate in isolation, but in interaction with other organizational and community actors (students, parents, other teachers, principals, school district educators, universities, ministries of education, colleges of teachers, and trade unions). Hence, interaction and interdependence is one of the most important characteristics of the Knowledge Management approach, where innovations are considered to be determined not only by the professionals in the system but also by the relations among them (Edquist, 2001, 227). The contested nature of British Columbia education may be impacting on educators’ ability to share knowledge, and consequently disturbing Fullan’s change management prescription.

One can also situate the NVSD’s knowledge management journey in relation to Parlby’s five stages (Table 3). The NVSD is approaching the knowledge aware stage (information plans, cohort analysis, and record keeping policy). The district has some early knowledge management practices in place (service delivery models). The district is also beginning to deal with the issue of systematic information sharing. The NVSD’s information communication technology strategy recognizes the potential of KM. The district appears on the way to being able to consider the opportunities of knowledge systems. It is beginning to map its organizational knowledge and the related business process reengineering. North Vancouver has a commercial interest on protection and exploitation of knowledge assets (Reading 44).
The present provincial, district, and school student education information systems measure and compare schools over time, not the cohort of students moving through a school or district schools over time. Changes in the outcomes scores of schools will not necessarily lead to examination of instruction practices or student engagement. Capturing information about classroom instructional strategies and student outcomes can allow for innovation and process change to occur. North Vancouver recognizes that it needs to move to cohort-based student information. The district has a tradition that emphasizes the creation of educator communities for facilitating knowledge exchange and creation. The district’s spatial focus is virtual; it uses the internet as the space to facilitate knowledge exchange. It sees its service delivery models as revenue generation knowledge products. Finally, the district sees knowledge management as a dimension of its competitive strategy. It has developed exemplar activities. The challenge of scalability of its activities remains to be examined.
Chapter 8  Implications

This case study has looked at the NVSD in the British Columbia and Canadian education setting. In this implications chapter, I review the North Vancouver School District working knowledge management position. I identify further research questions that flow from this case study. A model for school district leaders to use in assessing their organizations' working knowledge management is set out. I also raise policy issues related to the support needed by school district leaders to institute change in their organizations.

The signs of change are all around public education: information communication technologies, globalization, information overload, public sector restructuring, increasing public expectations, aging workforces, urban and rural community problems, and economic uncertainty (Bierema, 1999). At the same time, Hargreaves (2000, 3) argues that:

...school teachers work largely alone in classrooms with students. Much of their professional knowledge is acquired through experience and remains unvalidated and unshared. Teaching is a profession where the key knowledge and skills involved are locked in the heads of individuals, and the culture of schools maintains this state of affairs. This is far less true in business or medicine. The head of Hewlett-Packard, that most successful of firms, famously said: If HP knew what HP knows, we would be three times as profitable. If schools knew what all their individual teachers know, and if ministries knew what all their individual best schools know, how more effective would education systems be?

I believe the NVSD demonstrates a strategic interest in managing what they know. They articulate the central connection between teacher quality and student achievement in their educational leadership philosophy (the learning triangle). This case study illustrates that the North Vancouver School District service delivery models offers an interesting prototype of how educators can construct, capture, and share instructional knowledge. The NVSD is acting to make sense of their data and information so they can better function as a teaching and learning institution. The district and school planning process has provided school district leaders in the NVSD with a vehicle to explore their data and information. The case study also indicates that NVSD leaders recognize the importance and challenge of sharing knowledge in their district.
Applying Parlby’s model, I see the district as at the mid level of stage 2. The district is approaching being Knowledge Aware. Table 27 below identifies the Parlby characteristics demonstrated by the NVSD.

**Table 27: NVSD Knowledge Management Status**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Name</th>
<th>Characteristics</th>
<th>The NVSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Knowledge-chaotic</td>
<td>Unaware of concept&lt;br&gt;No information processing&lt;br&gt;No information sharing</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Knowledge-aware</td>
<td><strong>Awareness of KM need</strong>&lt;br&gt;<strong>Some KM processes</strong>&lt;br&gt;Technology in place&lt;br&gt;<strong>Sharing information an issue</strong></td>
<td>✓</td>
</tr>
<tr>
<td>3.</td>
<td>Knowledge-enabled</td>
<td>Benefits of KM clear&lt;br&gt;Standards adopted&lt;br&gt;Issues relate to technology and culture</td>
<td>✓</td>
</tr>
</tbody>
</table>

The NVSD is becoming increasingly aware of its working knowledge management needs. It has a prototype WKM process (i.e. service delivery model) in place; its technology platform operates at the level of emails and shared intranet folders; and planning for systematic sharing of information is a new component in its strategic planning framework. The district’s educators are showing leadership in these areas in the face of a provincial and national education system that I believe shies away from addressing the linkage between instruction, student engagement, and student achievement data.

The North Vancouver School District is comparatively “advanced” or knowledge-rich in terms of its data use and knowledge translation capacity. Further research is needed to explore the extent to which the model developed here is applicable to other districts that are knowledge rich or knowledge poor. The voices of teachers, parents, and students, because of the design of the study (delimitation), are largely absent. Further research is needed to explore the incorporation of the classroom-based research into the “accountability” framework and
accordingly into the knowledge management practices of school districts. The research undertaken here assumes the positive value of data use and knowledge management. Attitudes of a broader audience of “stakeholders” about this would be useful. The survey instrument refined in this study should be administered to a broader, representative sample of respondents to test attitudes and values about data management in the era of accountability and innovation. Finally, a case study that focuses explicitly on the cultures of competing stakeholders, the ways in which culture facilitates and inhibits knowledge management practices, and the ways in which different groups navigate to achieve knowledge management outcomes/processes would add to this knowledge base.

Public Policy

School district leaders need the leadership and support of provincial and federal governments and national policy bodies to address educator working knowledge management. The reports and analyses issued by schools, school districts, and ministries of education, as well as by national and international organizations such as the Council of Ministers of Education Canada (CMEC), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), or the Organisation for Economic Co-operation and Development (OECD), too often appear to emphasize a public-accounts view of education and consequently pay little attention to teacher quality. These organizations in the past have focused on system-level inputs (budget dollars, numbers of students, number of teachers, years in the system, etc.), outputs (number of graduates, numbers of dropouts, etc.), or limited outcomes (Pan-Canadian and international assessments, for example).

The British National Literacy Strategy evaluation team (Earl, 2000, 2) from the Ontario Institute for Studies in Education of the University of Toronto has set out a model to capture the complexity of the contexts surrounding education reform (Figure 12). This framework sets out
(on the left) policy levers at the national level and (in the middle) conditions for implementation in Local Education Authorities and schools.

Figure 12: Framework for Viewing Reform Strategies

The evaluation team framework (Earl, 2000, 3) suggests that change management in the local context requires building knowledge capacity to implement the reforms and foster the development of school cultures that will sustain improved practices and sustaining a comprehensive infrastructure that supports change in classroom and school practice by motivating educators. Elmore (1997, 2) similarly proposes that a missing element in the content standards, performance standards, and accountability prescription “...is the knowledge required for teachers and administrators to engage in a diverse kind of teaching and learning. Elmore (1997, 2) makes the point that “policies, by themselves, don’t impart new knowledge; they create the occasion for educators to seek new knowledge and turn that knowledge into new practice.”
The OECD (2001, 22) also argues that “managers in schools must not only think as managers of people and physical/financial resources, but also as managers of knowledge.”

What then do the data and knowledge information educators collect, analyze, implement, share and disseminate, and leave unexamined tell us about how they presently seem to approach improving student achievement? In this case study, the evidence points to dependence by policymakers and practitioners on output indicators to influence the performance of education systems and to inform decisions about educational priorities and directions. Raptis and Fleming argue (2003, 2) that:

Recent research has shown that government officials and educational administrators should broaden the suite of management data they collect to include more comprehensive information at the classroom level, as well as data which more fully describe the effects of changing curriculum and assessment practices. Policymakers must support educators in interpreting and implementing provincial and district standards and support research that illuminate how different curricular and instructional approaches in different contexts yield variable results in student learning.

We need to invest in and implement systematic processes for managing educator working knowledge. An active approach requires a focus on the, ‘Know Why’, ‘Know How’, and ‘Know Who’ of education organizations’ working knowledge. As Raptis and Fleming (1993) point out in the C.D. Howe Report Reframing Education, support and models that focus on instruction are needed by educators to facilitate systemic innovation, thus improving teaching, learning, and consequently student achievement.

Because there are a number of sensitive issues connected to what I have written, I believe it is important to make it clear what I am not saying. First of all, nothing in what I have written is meant to imply that there is no longer an important role for education accountability policy based on measuring improvements in student achievement. A Canadian Teachers Federation

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9 The idea of making clear what one is not saying comes from Don Wright’s argument in his report: Towards a better teacher bargaining model in British Columbia: Report to Honourable Graham Bruce on the teacher collective bargaining.
Op-ed document captures the spirit of where I believe education policy needs to move to. The Op-ed document proposes that:

Professional accountability is focused on meeting the needs of the learner. Teachers are responsible for:

- possessing a widely shared, continuously updated subject and pedagogical knowledge base;
- using that knowledge to make decisions in the best interest of students to enhance their opportunities to learn;
- working collaboratively with other professionals to make the best decisions for students;
- explaining and justifying their decisions about student learning to students, parents and the public;
- engaging in ongoing professional growth to enhance their professional practice

These ideas underline the utility of managing the working knowledge of education organizations. I would broaden the CTF definition of who is responsible to include not only teachers, but all educational leaders in the school and district. I contrast these CTF ideas with my understanding of the present policy and practice framework for education in British Columbia, where the emphasis is on the rights and duties of teachers, principals, and district officials to exercise individual professional judgment. I believe we need an appropriate alignment of responsibility, accountability, and authority among the members of the learning community in our schools. We need to create a system where the public understands that there is accountability and resources for individual, systematic, and scalable instructional practice, professional development, and active learning communities. We need to support our school district leaders by expanding our framework for action in Canada to address the complexity of teacher quality and instruction.

If school district leaders are going to implement successful knowledge management practices, there must be: 1) clearly stated goals and outcomes of the management process; 2) clearly stated means for achieving those goals; and 3) fiscal and human resources to support them.
Human resources implications – few people are data literate, but knowledge management is a system-wide (or district-wide) task. There must be room/resources to support training, and this must be ongoing and include more than one person. Steps to encourage a critical but positive “data/knowledge culture” should be taken. This would mean that quantitative data is not considered the most important source of information, but its use is valued and critically appreciated. Technology implications – data management and subsequent knowledge translation/management is/must be supported by the appropriate computer and information technology. Without it, human and other resources are wasted. Collaboration – implications for the us/them culture that often exists between practitioners (teachers, but not necessarily only teachers) and ‘managers’. One could also draw out the implications for data collectors, data users, and knowledge managers. I believe a central challenge for Canada is our lack of policy and financial support for school district leaders to implement working knowledge management for the improvement of teacher quality and student achievement.

This thesis explores an important area of school district organization and leadership. This case study indicates that provincial and national accountability processes, as well as school district climate, appear to ignore teacher quality and instructional practices from enquiry and dialogue. Our senior education leaders are not systematically initiating or supporting policies or research that focus on improving teacher quality, learning, and consequently student achievement.

School District Organization and Leadership

The literature on education leadership infrequently works from an explicit framework of how education organizations manage what they know. This study offers a different vision. An organizational knowledge profile can be useful for dialogue about the style of educational innovation in place, the role of knowledge in connection with education, as well as for telling
critical stories about educator beliefs. Educators who systematically can tell stories directly about what facts are crucial when it comes to triggering a search for new solutions, what causalities are at the core of the dominant models applied, what skills and competencies are crucial, and who in their organization knows what and who knows what to do will have tools in hand to examine, thrash out, and lead change in their organizations. I believe that the ‘Know Why’, ‘Know What’, ‘Know How’, and ‘Know Who’ knowledge schema can be used to inform education leaders’ practice at many levels of the system. Working Knowledge profiles can provide school district leaders an umbrella schema to examine and innovatively reorganize their school districts. The Leadership and Organization Working Knowledge Mobilization Model (Figure 13 below) delineates skills, behaviours, beliefs, and/or understanding related to school district leadership and organization and teacher quality, instruction, and student engagement.
**Figure 13: Leadership and Organization Working Knowledge Management (WKM)**

<table>
<thead>
<tr>
<th>Leadership and Organization</th>
<th>School Board</th>
<th>Ministry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>Attending to a broader moral purpose.</td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td>Setting a vision and context for creating coherence.</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Establishing a sense of urgency.</td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td>Cultivating relationships.</td>
<td></td>
</tr>
<tr>
<td>General Process</td>
<td>Keeping on top of the change process.</td>
<td></td>
</tr>
<tr>
<td>‘Know Why’</td>
<td>What causalities are at the core of the dominant models applied?</td>
<td></td>
</tr>
<tr>
<td>‘Know What’</td>
<td>What facts are crucial when it comes to triggering a search for new solutions?</td>
<td></td>
</tr>
<tr>
<td>‘Know How’</td>
<td>Refers to skills, i.e. the capability to do something.</td>
<td></td>
</tr>
<tr>
<td>‘Know Who’</td>
<td>Involves information about who knows what and who knows what to do.</td>
<td></td>
</tr>
<tr>
<td>Knowledge-chaotic</td>
<td>Unaware of concept; No working knowledge information processing; No working knowledge information sharing.</td>
<td></td>
</tr>
<tr>
<td>Knowledge-aware</td>
<td>Awareness of WKM need; Some WKM processes; Technology in place; Sharing information an issue.</td>
<td></td>
</tr>
<tr>
<td>Knowledge-enabled</td>
<td>Benefits of WKM clear; Standards adopted; Issues relate to technology and culture.</td>
<td></td>
</tr>
<tr>
<td>Knowledge-managed</td>
<td>Integrated frameworks; Benefits case realized; Issues in previous stages overcome.</td>
<td></td>
</tr>
<tr>
<td>Knowledge-centric</td>
<td>WKM part of mission; Knowledge-value; WKM integrated into culture.</td>
<td></td>
</tr>
</tbody>
</table>

Working Knowledge Management supports and enhances educational leaders’ knowledge management practices. This model allows pedagogic strategies to be visible and supports communities of practice. The Educator Working Knowledge Management Model has three dimensions: Working Knowledge, Fullan’s Change Management Model, and Parlby’s Knowledge Management Stages Model. The ‘Know Why’, ‘Know What’, ‘Know How’, and
‘Know Who’ framework provides an umbrella schema to visualize and organize working knowledge management practices in school districts. Parlby’s model provides a useful reference marker for examining where a school district or school may be on their knowledge management journey. Fullan’s change management model captures the leadership environment of the education entity. The models together offer vehicles for educators, civil servants, and elected officials to inform their consideration of how they manage their respective working knowledge activities. Together, these models offer opportunities for school district leaders to begin to investigate three questions: What school district organizational issues must be addressed to optimize the use of working knowledge?; What does a successful working knowledge project look like and how do you know when it has been successful?; and How do you identify schools and school districts that may be working knowledge rich or poor? I believe that school district leaders need to recognize the working knowledge management style of their school district organization and address and even adapt it if necessary to improve student achievement.

This thesis explores a significant area of school district organization and leadership. It examines the connection between a sense of purpose (‘Know Why’) and the realities in the system’s (nation’s, province’s, school district’s, school’s, educator’s) response to issues of accountability, teacher quality, and student improvement, and the need for improvements in relation to a districts’ understanding (‘Know What’ and ‘Know How’), and capacity (‘Know Who’) for working knowledge management. It illustrates the challenges for educators to feel at home in the knowledge society; and the requirement for educators to acknowledge that their ideas and practice can be made visible and are improvable. There is little evidence that educators, at any level of the system, are organized to systematically manage their working knowledge. As others have pointed out, we are not fostering ‘Know Who’ – a culture of collaboration and interaction within and across schools or among teachers – yet this is the very culture that is widely recognized as essential to harness the full power of educators’ ideas and
experience for the benefit of all learners. Lundvall, Fullan, Elmore, and Parlby’s ideas together offer school district leaders some tools to approach their organizational and leadership challenges.

I believe it rests with the provincial government; the learning community in our schools working with the school and district and labour educational leaders, students, and parents; and also with the federal government to support our school district leaders and invest in our school districts’ and schools’ capacity to manage educators’ working knowledge in the interest of building a national system of innovation into the local and virtual classrooms.
References


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Appendix A  Consent Letter

2002

Consent for Victor Glickman’s Education Doctorate Research Project: on NVSD’s practice as it relates to the organization of teaching and learning and our use of and need for data and information

Background: Victor Glickman is a doctoral student in the University of British Columbia, Faculty of Education Ed.D. in Educational Leadership and Policy program. He is also Director of Edudata Canada a research centre in the U.B.C., Faculty of Education. At Edudata Canada his work involves assisting researchers and school districts in accessing information to answer policy and research questions. The Ed.D program is centrally concerned with educational practice. The program is grounded in the belief that it is important for doctoral students to engage in scholarly discourse about understanding, critiquing and improving practice in educational settings. Mr. Glickman is presently assisting the NVSD in building their indicator data base and data warehouse

PROJECT: This research is for Victor Glickman's graduate degree. The aim of this study and the interview is to investigate how the NVSD’s management committee and leaders work with three processes: data creation or acquisition, data dissemination and data use. The interviews will explore present activities, the previous approach to information and future plans for incorporating information into performance management.

The initial interview with each subject will be one hour and half and a follow up interview will be one hour. The interviews will be audio taped. Interviewees are being asked to give their consent to speak on the record for the study. Since the interview population is small anonymity is not possible.

To maintain confidentiality, all notes, audiotapes and other documents will be stored in a locked cabinet that only I have access to. The raw data will be destroyed at the end of the project.

If you have questions or comments at any time about my research please contact my thesis adviser Dr. Donald Fisher- the Principal Investigator for this project, at

If you have concerns about your rights or treatment as a research subject you may contact the Director of the UBC Office of Research Services at

Yours sincerely

Victor B. Glickman

Page 1 of 2.
Consent for Victor Glickman’s Education Doctorate Research Project: on NVSD’s practice as it relates to the organization of teaching and learning and our use of and need for data and information

I realize I am free to withdraw my participation at any time without prejudice.

I consent to participate. I acknowledge receipt of a copy of this consent form.

Please sign below

Date: ___________________

NVSD
Appendix B  STC and NVSD Survey Instruments

<table>
<thead>
<tr>
<th>Reference Number</th>
<th>STC</th>
<th>NVSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledge management involves any systematic activity related to the capture and sharing of knowledge by the organization.</td>
<td>The “knowledge management” concept definition: Although knowledge management is a new concept, most knowledge sharing and knowledge transfer practices always existed in most organizations. Many organizations do not know or use the term “knowledge management”; however, they use many knowledge instruments (see definition of knowledge management below). What has changed, however, is the relative importance of the process of knowledge and information sharing. The term “knowledge management” is used loosely to refer to a broad collection of organizational practices related to generating, capturing, disseminating ‘Know How’, and promoting knowledge sharing within an organization, and with the outside world.</td>
</tr>
<tr>
<td></td>
<td>Within your Firm or Organization</td>
<td>Within your school or school district</td>
</tr>
<tr>
<td></td>
<td>Reference Year 1999</td>
<td>Reference Year 2002</td>
</tr>
<tr>
<td></td>
<td>The term workers include your regular workers (employees) as well as managers, executives, partners, directors, and persons employed under contract.</td>
<td>The term educators includes your regular teachers as well as principals, vice-principals, counsellors, school district staff, and persons employed under contract.</td>
</tr>
<tr>
<td>1011</td>
<td>Captures and uses knowledge obtained from other industry sources such as industrial associations, competitors, clients, and suppliers</td>
<td>Captures and uses knowledge obtained from other schools and school districts</td>
</tr>
<tr>
<td>1013</td>
<td>Dedicates resources to detecting and obtaining external knowledge and communicating it within your firm or organization</td>
<td>Dedicates resources to detecting and obtaining external knowledge and communicating it within the school or school district</td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1023</td>
<td>Facilitating collaborative work by project teams that are physically separated (“virtual teams”)</td>
<td>Facilitating collaborative work by project teams</td>
</tr>
<tr>
<td>2001</td>
<td>To improve the competitive advantage of your firm or organization</td>
<td>To improve student achievement in your school or school district</td>
</tr>
<tr>
<td>2005</td>
<td>To increase efficiency by using knowledge to improve production processes</td>
<td>To improve efficiency by using knowledge to improve teaching and learning processes</td>
</tr>
<tr>
<td>2012</td>
<td>To promote sharing or transferring knowledge with clients or customers</td>
<td>To promote sharing or transfer of knowledge with students and parents</td>
</tr>
<tr>
<td>2101</td>
<td>Increased our knowledge sharing horizontally (across departments, functions, or business units)</td>
<td></td>
</tr>
<tr>
<td>2105</td>
<td>Increased our number of markets (more geographic locations)</td>
<td>Increased our number of sites (more geographic locations)</td>
</tr>
<tr>
<td>2106</td>
<td>Improved client or customer relations</td>
<td>Improved relations with learner or parents</td>
</tr>
<tr>
<td>2107</td>
<td>Helped us add new products or services</td>
<td>Helped us add new programs or services</td>
</tr>
<tr>
<td>2109</td>
<td>Increased flexibility in production and innovation</td>
<td>Increased flexibility in teaching and innovation</td>
</tr>
<tr>
<td>211</td>
<td>Improved our corporate or organizational memory</td>
<td>Improved our district or organizational memory</td>
</tr>
<tr>
<td>2113</td>
<td>Increased our ability to capture knowledge from other business enterprises, industrial associations, technical literature, etc.</td>
<td>Increased our ability to capture knowledge from other schools, industrial associations, technical literature, etc.</td>
</tr>
<tr>
<td>2401</td>
<td>Customers or clients</td>
<td>Students or Parents</td>
</tr>
<tr>
<td>2701</td>
<td>Loss of market share</td>
<td>Loss of student population</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>---------------------------</td>
</tr>
</tbody>
</table>
| 2602 | Information technology, computer group  
|      | Marketing, sales  
|      | Research and Development  
|      | Engineering  
|      | Distribution, purchasing  
|      | Communications (corporate library)  
|      | Administration, accounting  
|      | Human resources  
|      | Production | School district services  
|      | Secondary School departments  
|      | Administration, Finance, Human Resources |
The "knowledge management" concept Definition:

Although knowledge management is a new concept, most knowledge sharing and knowledge transfer practices always existed in most organisations. Many organisations do not know or use the term "knowledge management", however, they use many knowledge instruments (see definition of knowledge management below). What has changed, however, is the relative importance of the process of knowledge and information sharing as a source of greater performance and better legitimacy of organisations.

The term "knowledge management" is used loosely to refer to a broad collection of organisational practices related to generating, capturing, disseminating know-how and promoting knowledge sharing within an organisation, and with the outside world.

Knowledge Management Practices

This section measures the use of formal, informal and everyday knowledge management practices.

1. Using the tables below, please indicate the use your school or school district makes of each of the knowledge management practices listed.

Use the following response categories in your answer:

- **In use before 2002** ➤ school or school district began regularly using this practice before 2002
- **Used since 2002** ➤ school or school district has regularly using this practice since 2002
- **Plan to use in the Next 24 months** ➤ school or school district intends to regularly using this practice in the next 24 months
- **Don't Know / Not Applicable**
For the purpose of this survey, the term **educators** includes your regular teachers as well as principals, vice principals, counsellors, school district staff and persons employed under contract.

Check **ONE** Response for each item.

<table>
<thead>
<tr>
<th>Knowledge Management Practices within your school or school district</th>
<th>In use before 2002</th>
<th>Used since 2002</th>
<th>Plan to use in the Next 24 months</th>
<th>Don't Know</th>
<th>Not Applicable</th>
</tr>
</thead>
</table>

### 1.1 Policies and Strategies

Your school or school district:

1001 A Has a written knowledge management policy or strategy

1002 B Has a value system or culture intended to promote knowledge sharing

1003 C Has policies or programs to improve educator retention

1004 D Uses partnerships or strategic alliances to acquire knowledge
### 1.2 Leadership

In your school or school district knowledge practices are:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1005</td>
<td>A</td>
<td>Responsibility of principals and school district senior staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1006</td>
<td>B</td>
<td>Responsibility of teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1007</td>
<td>C</td>
<td>Responsibility of district staff or district unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1008</td>
<td>D</td>
<td>Explicit criteria for assessing educator performance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Knowledge Management Practices within your school or school district

<table>
<thead>
<tr>
<th>Knowledge Management Practices within your school or school district</th>
<th>In use since before 2002</th>
<th>Used in 2002</th>
<th>Plan to use in the Next 24 months</th>
<th>Don’t Know / Not Applicable</th>
</tr>
</thead>
</table>

### 1.3 Incentives

Your school or school district specifically rewards knowledge sharing with:

- **1009 A** Monetary incentives

- **1010 B** Non-monetary incentive

### 1.4 Knowledge capture and acquisition

Your school or school district regularly:

- **1011 A** Captures and uses knowledge obtained from other schools and school districts

- **1012 B** Captures and uses knowledge obtained from public research institutions including universities and government ministries

- **1013 C** Dedicates resources to detecting and obtaining external knowledge and communicating it within the school or school district

- **1014 D** Encourages educators to participate in project teams with external experts
### 1.5 Training and Mentoring

Your school or school district:

<table>
<thead>
<tr>
<th>No</th>
<th>A</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015</td>
<td>Provides formal training related to knowledge management</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>1016</td>
<td>Provides informal training related to knowledge management</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>10017</td>
<td>Uses formal mentoring practices, including apprenticeship</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>10018</td>
<td>Encourages experienced educators to transfer their knowledge to new or less experienced educators</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>1019</td>
<td>Encourages educators to continue their education by reimbursing tuition fees for successfully completed work related courses.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>1020</td>
<td>Offers off site training to educators in order to keep skills current</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

### 1.6 Communications

In your school or school district educators share knowledge or information with:

<table>
<thead>
<tr>
<th>No</th>
<th>A</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1021</td>
<td>Regularly updating databases of good practices lessons learned or lists of experts</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>1022</td>
<td>Preparing written documentation such as lessons learned, training manuals, good work practices, articles for publication, etc. (organizational memory)</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>1023</td>
<td>Facilitating collaborative work</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>
1101 2. Are there any knowledge management practices that your school or school district uses that we have not included in this survey?

☐ No

☐ Yes, please specify

If you checked at least one response in either In Use before 2002 or Used since 2002 columns in any Question 1.1-1.6, please continue. Otherwise, go to Question 10.

Reasons for Using Knowledge Management Practices

This section measures the reasons for using knowledge management practices.

3. Please indicate the level of importance you attribute to each reason for using the knowledge management practices currently used in your school or school district.

☑ Check ONE response for each item

<table>
<thead>
<tr>
<th>Reasons knowledge management practices are used in your school or school district</th>
<th>Critical</th>
<th>Important</th>
<th>Somewhat Important</th>
<th>Not at All Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 A. To improve student achievement in/of your school or school district</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002 B. To help integrate knowledge within your school or school district</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003 C. To improve the capture and use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Objective</td>
<td>2004</td>
<td>2005</td>
<td>2006</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>2004</td>
<td>To improve sharing and transferring of knowledge partners in strategic alliances, joint ventures, or consortia</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2005</td>
<td>To improve efficiency by using knowledge to improve teaching and learning processes</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2006</td>
<td>To protect your school or school district from loss of knowledge due to educators' departures</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2007</td>
<td>To train educators to meet strategic objectives of your school or school district</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2008</td>
<td>To increase educator acceptance of innovation</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2009</td>
<td>To improve educator retention</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2010</td>
<td>To identify and/or to protect strategic knowledge present in your school or school district</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2011</td>
<td>To ease collaborative work of projects or teams</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2012</td>
<td>To promote sharing or transfer of knowledge with students and parent</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Results of Using Knowledge Management Practices

This section measures the reasons of using day knowledge management practices.

4. In the table below, please indicate the level of effectiveness you attribute to these results for using the knowledge management practices currently used in your school or school district.

☑ Check ONE response for each item

<table>
<thead>
<tr>
<th>Effectiveness of results of Using Knowledge Management Practices within your school or School district</th>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not at All Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>2101 A. Increased our knowledge sharing horizontally (across departments or schools or grades)</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>2102 B. Increased our knowledge sharing vertically (up the organization hierarchy)</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>2103 C. Improved educator efficiency and / or effectiveness</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2104 D. Improved skills and knowledge of educators</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>2105 E. Increased our number of sites (more geographic locations)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>2106 F. Improved relations with learner or parents</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>2107 G. Helped us add new programs or services</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>2108 H. Improved our adaptation of programs or services to learner requirements</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>2109 I. Increased flexibility in teaching and innovation</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>2110 J. Prevented duplicate research and development</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
</tbody>
</table>
2111 K. Improved our district or organizational memory

2112 L. Increased our ability to capture knowledge from public research institutions including universities and government

2113 M. Increased our ability to capture knowledge from other school districts, associations, research literature, etc.

2114 N. Improved involvement of educators in the workplace activities

Responsibility for Knowledge Management Practices

5. Who is responsible for the knowledge management practice currently in your school or school district?

☐ Check ONE response for each item

6. Do you measure the effectiveness of your school or school district knowledge management practices?

☐ Other, Please specify

1  ☐ Human Resources
2  ☐ IT Services
3  ☐ Knowledge Management Unit
4  ☐ Program and Extension Services
5  ☐ Executive Management Team (direct responsibility)

7  ☐ Don’t Know

Effectiveness of Knowledge Management Practices

6. Do you measure the effectiveness of your school or school district knowledge management practices?
2301 2. No □

2302 1. Please Specify

Sources of Knowledge Management Practices

7. 2401 Please indicate which source(s) triggered your school or school district to put into effect knowledge management practices that you currently use.

☐ Check ALL that apply

Internal

☐ A. Management

☐ B. Non-management

☐ C. Union(s) active in the workplace

External

☐ D. Schools, school districts or organization with which you have a strategic alliance, joint venture or consortium

☐ E. Competitors

☐ F. Suppliers

☐ G. Professional association or federation

☐ H. Universities, colleges, government ministries

☐ I. Consultants

☐ J. Regulatory agencies dealing with environmental health and safety, financial and other requirements

☐ K. Students or parents

☐ L. Other, please specify 2402

Spending on Knowledge Management Practices

168
8. 2501 Do the knowledge management practices in your school or school district have dedicated budgets or spending?

☐ Yes — In the next 24 months, do you anticipate the knowledge management practices' share of the budget to:

☐ Increase

☐ Decrease

☐ Stay the same

☐ Don’t Know

☐ No — In the next 24 months, do you anticipate the knowledge management practices' share of the budget to:

☐ Yes

☐ No

☐ Don’t Know

Resistance to Knowledge Management Practices

9. 2601 Did your school or school district experience significant resistance to implement any of the following management practices currently in use.

2 ☐ No

☐ Yes — Which groups resisted the implementation of knowledge management
2602 Check **ALL** that apply

**Administrators and Educators**

01 □ Management

02 □ Non-management educators

03 □ Union(s) active in the workplace

**Functions Departments**

04. School District Services

05 □ Secondary School Human Resources

03. Administration, Finance, Human Resources

**Incentives to implement Knowledge Management Practices**

10. 2701 What would motivate your school or school district to implement or to increase knowledge management practices?

**Check ALL that apply**

01 □ Information overload problems within your school or school district

02 □ Difficulty in capturing educator’s undocumented knowledge (know-how)

03 □ Use of knowledge management tools or practices by competitors

04 □ Loss of key personnel and their knowledge

05 □ Loss of student population

06 □ Difficulties in incorporating external knowledge

07 □ Others please specify

11 4001 Please indicate how long it took to complete this questionnaire.

Minutes ____________________
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12. 4002</strong></td>
<td><strong>Would you like to receive summary results from this survey.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>□</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>13.</strong></td>
<td><strong>COMMENTS</strong></td>
</tr>
</tbody>
</table>
Appendix D  NVSD Position Analysis

<table>
<thead>
<tr>
<th>Fullan</th>
<th>Position Description</th>
</tr>
</thead>
</table>
| Attending to a broader moral purpose | **SUPERINTENDENT OF SCHOOLS**  
13. Endeavours to maintain high standards of instruction.                                                |
| Cultivating relationships     | **DIRECTOR OF PROGRAM AND EXTENSION SERVICES**  
4. Maintains effective working relationships appropriate to responsibilities with schools, School District staff, the Ministry of Education and other School Districts. |

**ASSISTANT SUPERINTENDENT – WEST ZONE**  
1. Establishes effective working relationships with principals and teachers in schools.  

**ASSISTANT SUPERINTENDENT – EAST ZONE**  
1. Establishes effective working relationships with principals and teachers in schools.  

| Setting a vision and context for creating coherence in organizations. | **ASSISTANT SUPERINTENDENT – EAST ZONE**  
14. Reports regularly and as necessary to the Superintendent of Schools, keeps the Superintendent fully informed on the significant activities occurring in the areas under the Assistant Superintendent’s jurisdiction, and provides other administrative personnel with required information and reports |
| Keeping on top of the change process                             | **VICE-PRINCIPAL**  
3. Assists the teaching staff in curriculum implementation and provides leadership in the development and implementation of Provincial and School District curricula.  

**DISTRICT PRINCIPAL – PROGRAM SERVICES**  
4. Provides leadership, direction and support to schools in developing and implementing gifted/enrichment programs and related services.  

**PRINCIPAL**  
7. Provides leadership in the development and implementation of Provincial and School District curricula.  

| Sharing knowledge                                                   | **SUPERINTENDENT OF SCHOOLS**  
4. Ensures the Board is kept fully informed of the operation of the school system and provides such information and reports |
as the Board may require.

**ASSISTANT SUPERINTENDENT – WEST ZONE**

3. Shares with the Assistant Superintendent – East Zone – in arranging and conducting meetings of principals, school and district staff as may be required.

**ASSISTANT SUPERINTENDENT – EAST ZONE**

3. Shares with the Assistant Superintendent – West Zone – in arranging and conducting meetings of principals, school and district staff as may be required.

**PRINCIPAL**

12. Reports regularly and as necessary to the Assistant Superintendent regarding significant activities within the school, and provides such other information as may be required by other School District personnel.
<table>
<thead>
<tr>
<th>Kotter</th>
<th>Position Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing a sense of urgency</td>
<td></td>
</tr>
<tr>
<td>Forming a powerful guiding coalition</td>
<td><strong>ASSISTANT SUPERINTENDENT – WEST ZONE</strong>&lt;br&gt;13. Provides leadership and guidance in administration and program planning to the principals and schools in the zone.</td>
</tr>
<tr>
<td>Creating a vision</td>
<td><strong>MANAGER – INFORMATION TECHNOLOGY</strong>&lt;br&gt;1. Provides leadership for the development, installation, and maintenance of the District’s computer systems and related technology.</td>
</tr>
<tr>
<td>Communicating the vision</td>
<td><strong>SUPERINTENDENT OF SCHOOLS</strong>&lt;br&gt;11. Fosters active communications with schools and employees.&lt;br&gt;12. Promotes a high standard of professional leadership and a spirit of educational advancement throughout the District.</td>
</tr>
<tr>
<td></td>
<td><strong>VICE-PRINCIPAL</strong>&lt;br&gt;14. Utilizes appropriate communication and leadership skills to develop processes for school-wide decision making, problem solving and conflict resolution in a unionized environment.</td>
</tr>
<tr>
<td></td>
<td><strong>DIRECTOR OF PROGRAM AND EXTENSION SERVICES</strong>&lt;br&gt;7. Provides direction and supervision of School District programs and services, including French Immersion, Gifted/Enrichment, and English as a Second Language, Career Education, Band and Strings (Elementary).</td>
</tr>
<tr>
<td></td>
<td><strong>DISTRICT PRINCIPAL – STUDENT SERVICES</strong>&lt;br&gt;8. Communicates with administrators, professional staff, support staff and parents about changes in relevant provincial, District and school policies and programs.</td>
</tr>
<tr>
<td>Empowering others to act on the vision</td>
<td></td>
</tr>
<tr>
<td>Planning for and creating short-term wins</td>
<td></td>
</tr>
<tr>
<td>Consolidating improvements and producing still more change</td>
<td><strong>ASSISTANT SUPERINTENDENT – EAST ZONE</strong>&lt;br&gt;5. Ensures that schools of the zone are provided, within the available budgeted funds, with appropriate instructional materials, minor</td>
</tr>
</tbody>
</table>

174
<table>
<thead>
<tr>
<th>Elmore</th>
<th>Position Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>District 2 ranked 10th in the city in reading and fourth in mathematics out of 32 districts.</td>
<td>VICE-PRINCIPAL  2. In consultation with the Assistant Superintendent, determines the staffing requirements for the school, and manages the personnel processes involved with the staffing of the schools in accordance with Collective Agreement requirements.</td>
</tr>
<tr>
<td>Mobilizing people in the Service of Instructional Improvement</td>
<td>DISTRICT PRINCIPAL – STUDENT SERVICES  2. Assigns, in consultation with school principals, professional staff in the Department.  11. Assists the Human Resources Department and school administrators in the selection, assignment and supervision of professional and support staff working with students with exceptional learning needs.</td>
</tr>
<tr>
<td></td>
<td>ASSISTANT SUPERINTENDENT – WEST ZONE  10. Participates in selection of school administrators, and advises on administrator placement.  13. Cooperates with the Personnel Department in selecting, assigning, and supervising staff for the schools in the West Zone, and in providing assistance and background information for collective bargaining with teachers and support staff.</td>
</tr>
<tr>
<td></td>
<td>PRINCIPAL  3. In consultation with the Assistant Superintendent determine the staffing requirements for the school, and manages the personnel processes involved with the staffing of the schools in accordance</td>
</tr>
<tr>
<td>Role</td>
<td>Responsibilities</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SUPERINTENDENT OF SCHOOLS</td>
<td>8. Coordinates the operation of all departments and divisions within the school system, and delegate’s functions and responsibilities as required.</td>
</tr>
<tr>
<td>VICE-PRINCIPAL</td>
<td>16. Fosters and maintains expectation for high standards of student achievement, conduct and behaviour, and implements appropriate procedures to attain the desired outcome.</td>
</tr>
<tr>
<td>PRINCIPAL</td>
<td>17. Assigns responsibilities to each staff member and monitors, adjusts and evaluates performance as required by statute, Board policy, or Collective Agreement.</td>
</tr>
<tr>
<td>MANAGER – INFORMATION TECHNOLOGY</td>
<td>5. Assists with planning for designing and implementing Wide Area Networking and Local Area Networking.</td>
</tr>
<tr>
<td></td>
<td>6. Manages the installation and operation of the Provincial Learning Network in the District.</td>
</tr>
<tr>
<td></td>
<td>7. Supervises installation of computer systems in the School District and serves as project leader for subsequent installations.</td>
</tr>
<tr>
<td>ASSISTANT SUPERINTENDENT – EAST ZONE</td>
<td>7. Ensures that there are effective teacher evaluation processes in place in schools.</td>
</tr>
<tr>
<td></td>
<td>8. Conducts evaluation of principals and initiates or participates in school evaluations as required.</td>
</tr>
<tr>
<td>SECONDARY COORDINATOR</td>
<td>4. Seeks through consultation of others, the improvement in quality of the area being coordinated.</td>
</tr>
</tbody>
</table>

1. School Plans are focused on specific areas of student achievement. Student achievement includes intellectual, human and social development, and career development. The primary focus of the school is on intellectual development.
2. School Plans will reflect the context of the school and the full range of student served.
3. School Planning Councils are to consider the School District Performance plan (Accountability Contract) in the development of school plans.
4. Schools may use their Accreditation Growth Plans and 2001 Annual School Progress Reports in conjunction with the District Performance Plan.
5. Schools are expected to use a range of data sources in their planning. These may include classroom level data (e.g., performance standards information, report card data, and teacher observation), school level data (e.g., attendance data, behavioural information, and school-wide assessment information), district assessment information and provincial data.
6. In addition to classroom, school, and district data, schools will consider data provided by the Ministry including:
   • Graduation rates (where applicable)
   • Grade to grade transitions (Grades 6-12)
   • Foundations Skills Assessment information (Grades 4,7,10)
   • Government exam results and participation rates (where applicable)
   • Parents, student, and staff survey results
7. School Planning Councils consider the performance of a range of equity groups depending on the population of the school, e.g. gender, Aboriginal, ESL, Special Needs.
8. Schools should have a few key goals. For a real impact on student learning to occur, school-wide teamwork around a key goal is very important.
   • Specific
   • Measurable
   • Achievable
   • Relevant
   • Timely

SECTION A
1. Features (General Information on School Community)
   □ □ Include French Immersion numbers if appropriate
   □ □ Percent of Aboriginal and ESL student: calculate using 1701 numbers
   □ □ Percent of Special Education students (all categories including Gifted, 1701 numbers)
2. Improving Student Achievement (School Goals)
   □ □ Goals are based on school district priorities
   □ □ Goals are based on a wide array of student performance data
   □ □ Maximum number of goals is four
   □ □ If district goal is not included, see examples of process in Section 2
   □ □ Additional school based goals must be based upon provincial, district, school and/or classroom data
   □ □ If there are more than 5 Aboriginal students in a school, there must be an achievement goal for this population
3. Analysis/Rationale (For Setting School Goals)
• Analysis is based on provincial, district and school data
• Rationale must be supported by the analysis of multiple data sources

4. Data Sources
• Data sources should be taken from provincial, district, school and classroom information

5. Objective (Improve What for Whom)
• Is an aspect of the defined goal
• Is specific to a target group of students (cohort)
• Should include a time frame
• No less than two and no more than four objectives per goal

6. Strategies (Enable Goals and Objectives)
• Must begin with an active verb
• Describe what actions will be taken to reach the objective
• Describe programs of study that need to be implemented
• Reference current district initiatives and service delivery models should have at least three action statements and not more than six

North Vancouver School District Criteria for School Plans

7. Key Performance Measures
Baseline
• Indicates entry level performance of students prior to interventions described in Strategies section

Target
• Indicates desired increase in student achievement over designated periods of time

Actual
• Indicates the assessed student achievement level at the date designated in the Target

8. Consultation Process
Appropriate consultation can be achieved by:

• Paper surveys
• Telephone surveys
• PAC meetings
• Staff meetings
• Student Council meetings
• Focus groups with any of the above

Timelines
• May 1 Submission of proposed School Plan for approval
• June 30 Approval deadline
• October 31 Approved School Plan summary posted on School District website

9. School Planning council Approval of School Plan
• Signatures are required by the 5 official members of the School Planning Council

10. Board Approval
• Approval will be granted when the NVSD's General Criteria for School Plans have been met

SECTION B
PROCESS FOR ADDING TO OR DELETING DISTRICT GOALS
The following guidelines describe the process to follow if a School Planning Council wishes to consider deleting a district goal and/or wishes to consider an additional goal in their School Plan. A sample analysis and rationale is provided for both elementary and secondary schools.
11. Analysis/Rationale
- Analysis is based on provincial, district and school data
- Rationale must be supported by the analysis of multiple data sources

12. Data Sources
- Data sources should be taken from provincial, district, school and classroom information

13. Data Source List
- Include all relevant sources of data that describe student achievement in a specific curriculum area

14. District Standards Required
- Consider results, trends and school community expectations

15. Current School Standards
- Student achievement over time exceeds district averages by a significant margin

At the end of this process, the School Planning Council can then plan for appropriate goal setting and goes to numbers 3, 4, 5, 6 and 7 to set the school goals.

School District Goal 2: To Improve Success Rates in Reading

School Plan Goal 2:

NVSD
ELEMENTARY SCHOOL PLAN
MAY 1, 2003
SAMPLE

11. Analysis/Rationale: Sunny Slopes has attained results of 90% (meeting or exceeding expectations) as measured by the FSA (grades 4 and 7) for the past 3 consecutive years. Given the consistently high performance of our students, we have elected not to set a goal in this area. The rationale for doing this is based on the following data:

12. Data Sources used in conducting the analysis: FSA reading grades 4 and 7, TOPA, Report Card Term Marks Grades, Reading Assessment as analyzed by Performance Standards, District Assessment of Reading School Performance Standards.

13. DATA SOURCE
14. DISTRICT STANDARD
15. SCHOOL STANDARD ACHIEVED
FSA Exceeds district average by at least 10% TOPA June assessment for last two years show 95% of the students are above the 25th percentile Report Card Final Term Marks 85% of students in each grade level meet or exceed expectations on reading as assessed by the district report card data District Reading Assessments Reading for Information (Reading 44) 85% of students meet or exceed expectations in grades 2-7 in June assessment School Reading Performance Standards (Reading 44) School meets or exceeds all categories in all areas Other Information: List Data State specific standard

School District Goal 2: To Improve Success Rates in Mathematics

School Plan Goal 2:

NVSD
SECONDARY SCHOOL PLAN
MAY 1, 2003
SAMPLE

11. Analysis/Rationale: Clover Meadows has attained results of 90% (meeting or exceeding expectations) as measured by the FSA (grades 10) for the past 3 consecutive years. Given the consistently high performance of our students, we have elected not to set a goal in this area. The rationale for doing this is based on the following data:

12. Data Sources used in conducting the analysis: FSA grade 10, Provincial Exams (participation and success rate) Report Card Term Marks Grade 8, Grade 9, Grade 10, Grade 11, and Grade 12

Transitions Rates:
Gr. 8 to 9
Gr. 9 to 10
Gr. 10 to 12 Enrollment Trends, Principles, Applications, Essentials
Gr. 12 Exam – Participation and Success Rates
Gr. 6 & Gr. 8 District Math Assessment Results

13. DATA SOURCE

14. DISTRICT STANDARD

15. SCHOOL STANDARD ACHIEVED

FSA Exceeds district average by at least 10%
Grade 6 and 8 District Assessments Exceeds the district average by at least 10%
Report Card Final Term Marks 85% of students in each grade level meet or exceed expectations in Math Transition rates from Grades- 8-9/97%, 9-10/97%, 10-11/97%
Provincial Exams (all area of Math) Exceeds the district average by 10%
Grade 12 Math participation rates At or above the district average by 10%
Participation in senior math courses 30% or more
Principles of Math Essentials of Math 60%
Applications of Math 10% or less
Appendix F  Ministry Programs & Services for Education Professionals

Aboriginal Education (Kindergarten to Grade 12)
Accountability: District Financial Accountability and Enrolment Audits
Assessment Program (Foundation Skills Assessment)
Brokering and Licensing of Resources
Capital Planning - Schools
Career Programs
Classroom Assessment
Curriculum Implementation Schedule
Diversity
Data Collection Forms
Education Leaders Forum
ESL (English as a Second Language)
Examinations (Grade 10, 11, 12)
External Courses and Credits
Foundation Skills Assessment
Freedom Of Information
French Programs
Funding Allocation System (for Schools)
General Education Development (G.E.D.)
Generally Accepted Accounting Principles (GAAP) for School Districts
Graduation Program (Grade 10, 11 and 12)
Independent Schools
K-12 Curriculum & Learning Resources (Integrated Resource Packages)
Legislation
PEN (Personal Education Number)
Performance Standards
Policy
Primary Program
Promising Practices - from District Reviews
Provincial Learning Network (PLN) and Other Technology Initiatives
Satisfaction Survey
School Information (BC Schools, Districts and Contacts)
Special Education
Student Reporting Guidelines

http://www.bced.gov.bc.ca/educprof_ps.htm
Appendix G  Reading 44 Service Delivery model

Overview

The 1997 Canadian National Commission on Teaching concludes that what teachers know and can do is the most important influence on what students learn. While there is no identical mix of instructional materials and activities that will work for each and every child, there is a common menu from which effective teachers make choices. The challenge of schools is to ensure teachers have access to and knowledge about this common menu.

According to the Commission on the Prevention of Reading Difficulties with Young Children, children who experience difficulties learning to read, even those with identifiable learning disabilities, do no need radically different sorts of supports than children at low risk.
(Snow, Burns & Griffin, 1998)

North Vancouver Reading Framework

Our educational system is dependent on the ability to read. The knowledge of how children learn to read and what constitutes successful teaching practice has increased significantly over the last decade. The current research base recognizes that reading is complex and developmental over time.

Children need to learn to read using materials specific to their level of ability. A variety of groupings, instructional approaches and materials used in every curricular area increase the success of classroom reading programs. Teachers need to support the learner until he or she is confident and fluent with the reading materials. Like teaching a child to ride a bicycle, this support is gradually removed as the learner becomes a competent reader.

The Reading 44 Framework outlines a classroom reading program for all students K-10. North Vancouver supports the belief that all teachers are teachers of reading. The purpose of the Reading 44 Framework is to help teachers use the knowledge available about the teaching of reading in their everyday classroom practice.

When every teacher is a teacher of reading and every child works with text at his or her instructional level, then reading success will be within the grasp of all students.

The Reading 44 Primary, Intermediate and Secondary resource books all center around twelve reading strategies that we use as good readers and describe the many instructional activities and graphic organizers for classroom use that encourage students to learn these strategies.

The Twelve Reading Strategies

1. Access background knowledge.
2. Predict what will be learned or what will happen.

3. Table out unknown words.


5. Make mental pictures.

6. Connect what you read with what you already know.

7. Determine the most important ideas and events and the relationship between them.

8. Extract information from text, charts, graphs, maps and illustrations.

9. Identify and interpret literary elements in different genres.

10. Summarize what has been read.

11. Make inferences and draw conclusions.

12. Reflect and respond.

The Components of a Good Reading Program

In addition, the Reading 44 Resource books describe the six components of a good reading program for Primary classrooms including guided reading; shared reading; reading/writing connection; home reading program; independent reading and read aloud and respond. The eight components of a good reading program for Intermediate classrooms include guided reading; independent reading; content area reading; reading/writing connection; home reading program; literature circles; shared reading and read aloud and respond.

The secondary resource book describes methods of general reading improvement as well as specific ideas for reading in English, reading in math, reading in science and reading in social studies. Supporting sections of the documents describe student and teacher resources, necessary reading skills for students, assessment, classroom organization, and the research base. The Reading 44 resource books help every teacher plan a balanced reading program for their classroom. All student materials are available in French for immersion programs.
Firm Foundations:

Early Literacy Teaching and Learning
The Reading 44 kindergarten resource book Firm Foundations incorporates the teaching of early literacy skills into the play-based environment of the kindergarten classroom.

A concerted effort has been made to ensure that teachers share a common knowledge base about the developmental progression of early literacy skills in rhyming, segmenting and blending, concepts of print, and letter-sound mastery. Teachers of five-year-olds integrate these skills into circle and center time through daily language activities and games. Performance assessments, intense guided play; a screening assessment and an intervention component round out this comprehensive kindergarten program.

Visit the Firm Foundations website for more information.

www.firmfoundations.ca

http://www.nvsd44.bc.ca/Reading44/overview.html
Appendix H  NVSD 2002/2002 Strategic Focus

2001/2002 Focus

Reading
The Core Reading Framework (Reading 44)
Firm Foundations
Early Identification and Intervention of Students At risk for Reading Failure
Mathematics
Grade 7 to 8 Transitions
Early Numeracy
Social Studies
Social Responsibility
Critical Thinking
Addressing Diverse Needs of Students in the Classroom
Special Education
English as a Second Language
Recommendations of the Provincial Special Education Review
Safe and Caring Schools
Service Delivery Model (school climate, codes of conduct, violence prevention programs, intervention strategies, crisis management planning, and student empowerment)
Managing Violent Incidents (investigations, needs of victims and communication)
Improving the School Success Rate of First Nations Students
Removal of Obstacles to Success
Reading, Numeracy and Writing
School Completion Rates
Attendance
Applications of Information Technology
Web in the Classroom
CORE Project
Wireless Technology
Assessing and Reporting Student Progress
Use of Performance Standards
Criterion - Referenced Assessment
Report Card Pilot

http://www.nvsd44.bc.ca/NV/SearchResults.asp?RID=931
### Appendix I  Goals by Type and Schools & Participation Rate

<table>
<thead>
<tr>
<th>Goal Type</th>
<th>Elementary</th>
<th>Secondary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy</td>
<td>36</td>
<td>8</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>97%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Numeracy</td>
<td>30</td>
<td>8</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>88%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Aboriginal</td>
<td>10</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td>Safe and Caring Schools</td>
<td>36</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>21%</td>
<td>79%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>29</td>
<td>148</td>
</tr>
</tbody>
</table>
### Appendix J ‘Know How’ Strategy Category Definition

<table>
<thead>
<tr>
<th>‘Know How’ Strategy Category</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional intervention, support, resources for target students /differentiated instruction</td>
<td>Identifying and developing and implementing strategies for target student groups.</td>
</tr>
<tr>
<td>Attendance</td>
<td>Monitoring and improving student attendance</td>
</tr>
<tr>
<td>Communication through web site, newsletter, assemblies, etc.</td>
<td>School-level communication events or activities to raise awareness, promote and recognize behaviour, and disseminate information.</td>
</tr>
<tr>
<td>Community projects/involvement</td>
<td>Projects/activities involving community people coming into the schools, or students going into the communities</td>
</tr>
<tr>
<td>District specialist support</td>
<td>Strategies that call for district specialist support.</td>
</tr>
<tr>
<td>In-service teacher training/Other forms of training</td>
<td>Teacher/staff formal or informal training</td>
</tr>
<tr>
<td>LAC/LSC</td>
<td>Strategies involve the use of LAC/LSC. Strategies are grouped under this category even when multiple location (classroom, LAC, LSC, etc) are mentioned.</td>
</tr>
<tr>
<td>Math 44</td>
<td>The district Math 44 program. In-service training on Math 44 will also be included in this category.</td>
</tr>
<tr>
<td>Math 44 – use of manipulatives</td>
<td>Use of manipulatives (a component of Math 44)</td>
</tr>
<tr>
<td>Parental Involvement/Parent seminars/home programs</td>
<td>Involving parents in providing home support for their children.</td>
</tr>
<tr>
<td>Peer counselling/tutoring/mentoring programs</td>
<td>Peer counselling, tutoring and mentoring programs.</td>
</tr>
<tr>
<td>Performance Standards</td>
<td>The use and assessment based on BC Ministry of Education's Performance Standards.</td>
</tr>
<tr>
<td>Reading 44</td>
<td>The statement explicitly or implicitly mentions Reading 44 program. In-service training on Reading 44 is also grouped under this category.</td>
</tr>
<tr>
<td>Reading 44 – guided reading</td>
<td>Guided reading (a component of Reading 44)</td>
</tr>
<tr>
<td>Research–collect and analyze information</td>
<td>Administering tests, collecting information from sources such as students, teachers, experts, and analyze outcomes</td>
</tr>
<tr>
<td>Safe and Caring Schools: A Guide for Schools</td>
<td>Any school or classroom-based activities related to developing, implementing and revising the Safe and Caring Schools program</td>
</tr>
<tr>
<td>School-based Aboriginal programs</td>
<td>School designed and run programs aimed to help Aboriginal students</td>
</tr>
<tr>
<td>School-based math programs</td>
<td>School specific math program</td>
</tr>
<tr>
<td>'Know How' Strategy Category</td>
<td>Criteria</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>School-based reading programs</td>
<td>School designed reading programs for students.</td>
</tr>
<tr>
<td>School-based writing programs</td>
<td>School designed writing programs for students.</td>
</tr>
<tr>
<td>Sharing information and collaboration with feeder schools</td>
<td>Secondary and elementary schools trying to collect and share information about their transition students, and collaborate on curriculum alignment.</td>
</tr>
<tr>
<td>Support and resources for classroom, teachers, libraries, etc.</td>
<td>Instructional resources.</td>
</tr>
<tr>
<td>Technology</td>
<td>The use of software, computers, etc. as a form of support strategy.</td>
</tr>
</tbody>
</table>
## Appendix K  Effectiveness of Results of Using Knowledge Management Practices

<table>
<thead>
<tr>
<th>Effective Results</th>
<th>Very Effective</th>
<th>Effective</th>
<th>Somewhat Effective</th>
<th>Not at All Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased our knowledge sharing horizontally (across departments or schools or grades)</td>
<td>4 (36%)</td>
<td>1 (9%)</td>
<td>5 (46%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>Increased our knowledge sharing vertically (up the organization hierarchy)</td>
<td>1 (9%)</td>
<td>7 (64%)</td>
<td>2 (18%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>Improved educator efficiency and / or effectiveness</td>
<td>1 (9%)</td>
<td>3 (27%)</td>
<td>7 (64%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Improved skills and knowledge of educators</td>
<td>1 (10%)</td>
<td>6 (60%)</td>
<td>3 (30%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Increased our number of sites (more geographic locations)</td>
<td>0 (0%)</td>
<td>3 (27%)</td>
<td>3 (27%)</td>
<td>5 (46%)</td>
</tr>
<tr>
<td>Improved relations with learner or parents</td>
<td>1 (9%)</td>
<td>3 (27%)</td>
<td>7 (64%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Helped us add new programs or services</td>
<td>2 (18%)</td>
<td>5 (46%)</td>
<td>4 (36%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Improved our adaptation of programs or services to learner requirements</td>
<td>2 (18%)</td>
<td>6 (55%)</td>
<td>3 (27%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Increased flexibility in teaching and innovation</td>
<td>2 (20%)</td>
<td>4 (40%)</td>
<td>4 (40%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Prevented duplicate research and development</td>
<td>1 (9%)</td>
<td>2 (18%)</td>
<td>6 (55%)</td>
<td>2 (18%)</td>
</tr>
<tr>
<td>Improved our district or organizational memory</td>
<td>1 (9%)</td>
<td>6 (55%)</td>
<td>4 (36%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Increased our ability to capture knowledge from public research institutions including universities and government</td>
<td>0 (0%)</td>
<td>2 (18%)</td>
<td>7 (64%)</td>
<td>2 (18%)</td>
</tr>
<tr>
<td>Increased our ability to capture knowledge from other school districts, associations, research literature, etc.</td>
<td>0 (0%)</td>
<td>2 (18%)</td>
<td>9 (82%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Improved involvement of educators in the workplace activities</td>
<td>1 (9%)</td>
<td>3 (27%)</td>
<td>7 (64%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
## Appendix L Knowledge Management Practices

<table>
<thead>
<tr>
<th>Knowledge Management Practices</th>
<th>In Use</th>
<th>Since 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A responsibility of principals and school district senior staff</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>A responsibility of teachers</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>A responsibility of district staff or district unit</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Explicit criteria for assessing educator performance</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Knowledge capture and acquisition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Captures and uses knowledge obtained from other schools and school districts</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Captures and uses knowledge obtained from public research institutions including universities and government ministries</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Dedicates resources to detecting and obtaining external knowledge and communicating it within the school or school district</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Encourages educators to participate in project teams with external experts</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td><strong>Training and Mentoring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides formal training related to knowledge management</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Provides informal training related to knowledge management</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Uses formal mentoring practices, including apprenticeship</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Encourages experienced educators to transfer their knowledge to new or less experienced educators</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Encourages educators to continue their education by reimbursing tuition fees for successfully completed work related courses.</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Uses formal mentoring practices, including apprenticeship</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td><strong>Policies and Strategies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses partnerships or secret alliances</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>To improve educator retention</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Value system or culture intended to promote knowledge sharing</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Written knowledge management policy or strategy</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regularly updating databases of good practices lessons learned or lists of experts</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Preparing written documentation such as lessons learned, training manuals, good work practices, articles for publication, etc. (organizational memory)</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Facilitating collaborative work by project teams</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td><strong>Incentives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monetary incentives</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Non-monetary incentive</td>
<td>8</td>
<td>0</td>
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</table>
## Appendix M Reasons for Using Knowledge Management Practices

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Critical</th>
<th>Important</th>
<th>Somewhat Important</th>
<th>Not at All Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve student achievement in/of your school or school district</td>
<td>10 (91%)</td>
<td>1 (10%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>To help integrate knowledge within your school or school district</td>
<td>3 (27%)</td>
<td>8 (73%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>To improve the capture and use of knowledge from sources outside your school or school district</td>
<td>1 (9%)</td>
<td>6 (55%)</td>
<td>4 (36%)</td>
<td>0</td>
</tr>
<tr>
<td>To improve sharing and transferring of knowledge partners in strategic alliances, joint ventures, or consortia</td>
<td>1 (9%)</td>
<td>5 (46%)</td>
<td>5 (46%)</td>
<td>0</td>
</tr>
<tr>
<td>To improve efficiency by using knowledge to improve teaching and learning processes</td>
<td>8 (73%)</td>
<td>2 (18%)</td>
<td>1 (9%)</td>
<td>0</td>
</tr>
<tr>
<td>To protect your school or school district from loss of knowledge due to educators’ departures</td>
<td>1 (9%)</td>
<td>6 (55%)</td>
<td>2 (18%)</td>
<td>2 (18%)</td>
</tr>
<tr>
<td>To train educators to meet strategic objectives of your school or school district</td>
<td>4 (36%)</td>
<td>5 (46%)</td>
<td>2 (18%)</td>
<td>0</td>
</tr>
<tr>
<td>To increase educator acceptance of innovation</td>
<td>1 (9%)</td>
<td>8 (73%)</td>
<td>2 (18%)</td>
<td>0</td>
</tr>
<tr>
<td>To improve educator retention</td>
<td>1 (9%)</td>
<td>3 (27%)</td>
<td>6 (55%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>To identify and/or to protect strategic knowledge present in your school or school district</td>
<td>3 (27%)</td>
<td>6 (55%)</td>
<td>1 (9%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>To ease collaborative work of projects or teams</td>
<td>3 (27%)</td>
<td>5 (46%)</td>
<td>2 (18%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>To promote sharing or transfer of knowledge with students and parent</td>
<td>4 (36%)</td>
<td>4 (36%)</td>
<td>3 (27%)</td>
<td>0</td>
</tr>
</tbody>
</table>
### Appendix - Reasons for Using Knowledge Management Practices

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Critical</th>
<th>Important</th>
<th>Somewhat Important</th>
<th>Not at All Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve student achievement in/of your school or school district</td>
<td>10 (91%)</td>
<td>1 (10%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>To help integrate knowledge within your school or school district</td>
<td>3 (27%)</td>
<td>8 (73%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>To improve the capture and use of knowledge from sources outside your school or school district</td>
<td>1 (9%)</td>
<td>6 (55%)</td>
<td>4 (36%)</td>
<td>0</td>
</tr>
<tr>
<td>To improve sharing and transferring of knowledge partners in strategic alliances, joint ventures, or consortia</td>
<td>1 (9%)</td>
<td>5 (46%)</td>
<td>5 (46%)</td>
<td>0</td>
</tr>
<tr>
<td>To improve efficiency by using knowledge to improve teaching and learning processes</td>
<td>8 (73%)</td>
<td>2 (18%)</td>
<td>1 (9%)</td>
<td>0</td>
</tr>
<tr>
<td>To protect your school or school district from loss of knowledge due to educators’ departures</td>
<td>1 (9%)</td>
<td>6 (55%)</td>
<td>2 (18%)</td>
<td>2 (18%)</td>
</tr>
<tr>
<td>To train educators to meet strategic objectives of your school or school district</td>
<td>4 (36%)</td>
<td>5 (46%)</td>
<td>2 (18%)</td>
<td>0</td>
</tr>
<tr>
<td>To increase educator acceptance of innovation</td>
<td>1 (9%)</td>
<td>8 (73%)</td>
<td>2 (18%)</td>
<td>0</td>
</tr>
<tr>
<td>To improve educator retention</td>
<td>1 (9%)</td>
<td>3 (27%)</td>
<td>6 (55%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>To identify and/or to protect strategic knowledge present in your school or school district</td>
<td>3 (27%)</td>
<td>6 (55%)</td>
<td>1 (9%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>To ease collaborative work of projects or teams</td>
<td>3 (27%)</td>
<td>5 (46%)</td>
<td>2 (18%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>To promote sharing or transfer of knowledge with students and parent</td>
<td>4 (36%)</td>
<td>4 (36%)</td>
<td>3 (27%)</td>
<td>0</td>
</tr>
</tbody>
</table>
Appendix N  Reading Policy

NVSDA Comprehensive and Balanced Approach to the Teaching of Reading
Revised July 2002

Introduction

The mission of the NVSD is to provide all learners with opportunities to succeed in challenging educational programs. The key concepts are opportunities for students and school success for all learners.

The ability to read, with proficiency, is the most important prerequisite to success at school. The ability to read proficiently allows learners to take the fullest advantage of the program opportunities they are provided in schools. The ability to read is fundamental to success in all educational programs. Reading is best taught through comprehensive and balanced reading programs that are research-based and that combine skill development and literature-based activities.

Reading 44

Reading 44 is the name given to animate all policies, activities, plans and initiatives undertaken by the NVSD to improve the reading proficiency of all students. Reading 44 is built on the following principles and assumptions:

- Reading is fundamental to success in all programs
- All students provided with the proper instruction and assessed appropriately can learn to read with proficiency
- Reading skills and strategies need to be taught explicitly from kindergarten to grade 12 within the context of authentic reading and writing activities
- Reading success is achieved best by effective classroom instruction in all grades by well-prepared and well-supported classroom teachers.
- It is everybody’s job to teach reading
- Early and ongoing assessment and intervention are critical to ensure reading success for all students
- Below grade level reading strategies at the end of grade 3 are linked to later academic and behavioural problems

To provide a sense of urgency, the NVSD established a commitment that by the end of grade 3, all students will read at or above grade level. This commitment, called a “stretch goal” focuses the School District on what has to be done, what obstacles have to be overcome to
meet this commitment. Stretch goals speak to deep change and must be supported by powerful strategies.

The Reading 44 strategies are expressed in four main components. The four components are the classroom, the school, the school district, and action research.

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Classroom

At the classroom level, reading instruction is animated through the use of:

Reading 44: The Core Reading Framework (Primary)

Reading 44: The Core Reading Framework (Intermediate)

Reading 44: The Core Reading Framework (Secondary)

Firm Foundations: Early Literacy Teaching and Learning

These are locally developed classroom reading programs, consisting of reading strategies, instructional activities and graphic organizers for all students, kindergarten to Grade 10. Classroom teachers developed these programs, for classroom teachers, and with the suggestions and advice of classroom teachers. The programs are built on the premises that all teachers are teachers of reading and that reading skills and strategies need to be taught explicitly by well-prepared and supported classroom teachers using proper instructional and assessment strategies.

The purpose of Reading 44: The Core Reading Framework is to help all classroom teachers use the knowledge about the teaching of reading in their everyday classroom practice. The main features of Reading 44: The Core Reading Framework are:

- Twelve (12) reading strategies, called the daily dozen, expressed in both student language and teacher language for use in all grades K to 12
- Six (6) components of a balanced reading program at the primary (grade 1-3) level: Guided Reading, Shared Reading, Reading/Writing Connection, Home Reading Program, Independent Reading and Read Aloud and Respond.
- Eight (8) components of a balanced reading program at the intermediate (grade 4-7) level: Guided Reading, Independent Reading, Content Area Reading, Reading Writing Connection, Home Reading Program, Literature Circles, Shared Reading and Reading Aloud and Respond.
- Emphasis on reading in all curricular areas at the secondary (grade 8-10) level with strategies for: Reading in English, Reading in Social Studies, Reading in Science, and Reading in Mathematics
• Fifty (50) instructional activities which support the components of a balanced reading program with accompanying graphic organizers
• Appendices of grade level reading skills, assessment practices, resources, and current research

Firm Foundations is a classroom program for early literacy teaching and learning. The purpose of this Program is to provide the necessary supports so that each kindergarten classroom in the School District will reflect exemplary instruction in reading, will use appropriate student diagnostic/screening/assessment methods, and will provide for timely intervention programs at the classroom and school level and in the home. Firm Foundations: Early Literacy Teaching and Learning focuses on early literacy skills development in:

• Phonological awareness – rhyming, segmenting, and blending
• Letter – sound mastery
• Concepts of print

Firm Foundations: Early Literacy Teaching and Learning provides for direct instruction and practice of the above skills in the play-based environment of the kindergarten classroom, outlines.
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Performance assessment for selected children, advocates intense guided play at home and at school, and suggests a screening assessment for all children and an intervention program for those children at risk for reading failure.

School

The second component of Reading 44 is the Early and Ongoing Diagnostic Assessment and Intervention Approaches at the school level. These approaches are for students with reading difficulties who are not acquiring basic skills, not responding to classroom teaching approaches, learning in different ways than the majority of their peers, and requiring more time to learn. These approaches include:

- The Phono-Graphix Reading Program, a linguistic/phonetic method directed at decoding;
- The Orton-Gillingham Therapeutic Tutoring Program, a multi-sensory phonetic program that accommodates students with specific disabilities in reading, writing and spelling;
- Reading Recovery, a second chance program of daily and individualized instruction for students having marked reading difficulty after one year in school;
- Launch Into Reading Success, an auditory training program, involving a great deal of practice, to use with kindergarten students identified as having such low levels of phonological awareness that they are at risk of failure in reading success;

School District

The third component of Reading 44 is the specialized programs/supports provided at the grade three and four level for students whose learning needs are of such severity that they have not been met completely by classroom and school programs. These programs/supports are for learners who have been identified as having severe language and thinking problems in addition to memory problems. These specialized programs/supports are:

- The Literacy Centre is a one term (54 to 57 days) five-month pullout program for grade 3 students, where all intervention approaches are applied to intensive and extensive remediation in language arts, social studies and mathematics. Enrollment in this program is limited to 7 students each term who have been clearly and thoroughly identified as presenting the above characteristics.
• The Family of Schools Learning Support Teams, who provide assessment, teaching and support services to learning disabled students at the grades 3 and 4 level referred by school-based resource teams.

Participation on a Longitudinal Research Study

A valuable source of expertise, inspiration and energy for the School District focus on reading instruction is the active participation of students and staff of the NVSD in a Longitudinal Research Study directed by Dr. Linda Siegel of the University of British Columbia.

The five-year study, which began in 1997/98, focuses on Early Identification and Intervention for the Prevention of Learning Disabilities. Specifically, the study set out to develop a screening tool by determining which of five variables can be reliably used as early predictors of severe difficulties in the acquisition of reading skills. The five kindergarten measures are:

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• Reading
• Phonological processing
• Working memory
• Syntax
• Spelling

The grade four variables are:

• Word reading
• Memory
• Phonological processing
• Syntax
• Reading comprehension
• Spelling
• Arithmetic

The hypotheses being tested are that children at risk for reading failure can be detected in kindergarten using instrumentation based on the variables above and interventions based on the above variables will prevent the development of serious problems in children at risk of reading disabilities.

The active participation by our schools in the study of early identification and intervention for the prevention of learning disabilities are leading to many benefits for students and teachers. These benefits include:
• Clear early identification of potential “at risk” learners
• Acquisition and use of a variety of intervention strategies
• Assessment of the effectiveness of intervention strategies
• Improved diagnostic and teaching skills of teachers
• Reductions in the number of “at risk” readers

Preliminary results of the action research are demonstrating the positive impact of the School District emphasis upon the teaching of reading and the success of early identification and intervention for children at risk for reading failure.

• In kindergarten testing (1998), 23.8% of English speakers were identified as at-risk for reading failure and 37.2% of ESL speakers were identified as at-risk for reading failure.
• For the same students tested at grade 2 (2000), 4.2% of English speakers were identified as reading disabled and 3.72% of ESL speakers were identified as reading disabled.
• For the same group tested at grade 3 (2001), 3.8% of English speakers were identified as reading disabled and 2.50% of ESL speakers were identified as reading disabled.
• In the grade 4 testing (2002), 3.05% of the English speakers were identified as reading disabled and 3.00% of the ESL students were identified as reading disabled.

September 2001

Revised: July 2002
### Appendix O  Reasons for Using Knowledge Management Practices

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Know How</th>
<th>Critical</th>
<th>Important</th>
<th>Somewhat Important</th>
<th>Not at All Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve student achievement in your school or school district</td>
<td>Implementation</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>To help integrate knowledge within your school or school district</td>
<td>Sharing</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>To improve the capture and use of knowledge from sources outside your school or school district</td>
<td>Capture</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>To improve sharing and transferring of knowledge partners in strategic alliances, joint ventures, or consortia</td>
<td>Sharing</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>To improve efficiency by using knowledge to improve teaching and learning processes</td>
<td>Implementation</td>
<td>9</td>
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<tr>
<td>To protect your school or school district from loss of knowledge due to educators' departures</td>
<td>Implementation</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>2</td>
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<tr>
<td>To train educators to meet strategic objectives of your school or school district</td>
<td>Sharing</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Reasons</td>
<td>Know How</td>
<td>Critical</td>
<td>Important</td>
<td>Somewhat Important</td>
<td>Not at All Important</td>
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<tr>
<td>To increase educator acceptance of innovation</td>
<td>Sharing</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>To improve educator retention</td>
<td>Implementation</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>To identify and/or to protect strategic knowledge present in your school or school district</td>
<td>Capture</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>To ease collaborative work of projects or teams</td>
<td>Sharing</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>1</td>
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<tr>
<td>To promote sharing or transfer of knowledge with students and parent</td>
<td>Dissemination</td>
<td>5</td>
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## Appendix P  Triangulation of Case Study Resources

<table>
<thead>
<tr>
<th>Case Study Resources</th>
<th>Know What</th>
<th>Know Why</th>
<th>Know How</th>
<th>Know Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know What</td>
<td>What facts are crucial when it comes to trigger search for new solutions?</td>
<td>What causalities are at the core of the dominant models applied?</td>
<td>Refers to skills, i.e. the capability to do something</td>
<td>Involves information about who knows what and who knows what to do.</td>
</tr>
<tr>
<td>ministry Documents</td>
<td>Foundation Skills Assessments, Provincial Examinations, School Satisfaction surveys, School district revenue and expenditure, Student registration data, Teacher data, district revenue and expenditure, Student registration data, Teacher data, School and school district profiles</td>
<td>No information collected. The assessments are designed to measure student achievement and not linked to their teaching and learning experiences so as to support correlations of teacher pedagogy to learner outcomes.</td>
<td>No information collected</td>
<td>No information collected</td>
</tr>
<tr>
<td></td>
<td>Information about budgets, expenditures and student achievement are not part of the present ‘Know What’ vision of the Ministry.</td>
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<tr>
<td>NVSD Documents</td>
<td>Know What</td>
<td>Know Why</td>
<td>Know How</td>
<td>Know Who</td>
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<td>The province’s performance measures of student achievements provide outcomes data for decision-making and planning at all levels of the education system.</td>
<td>The district’s learning triangle reflects an understanding of students, teachers and on these three relationships - curriculum student and subject matter, teacher and subject matter and student and teacher. The district’s Reading Policy (Appendix K).</td>
<td>District Service Delivery Models</td>
<td>No information collected</td>
<td></td>
</tr>
<tr>
<td>The school and district plans and include 500 measure statements related to the sixteen distinct measurement instruments (Table 20)</td>
<td>Implementation ‘Know How’ dominates the school strategies followed by capture ‘Know How’, dissemination ‘Know How’ and Sharing ‘Know How’.</td>
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<tr>
<td>Know What</td>
<td>Know Why</td>
<td>Know How</td>
<td>Know Who</td>
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<tr>
<td>NVSD Survey</td>
<td></td>
<td>The educator survey (Table 22) indicates that the educational leader saw the effectiveness of results for using their existing knowledge management practices most problematic in relation to improving educator efficiency and or effectiveness. This was closely followed by the somewhat effectiveness of increasing knowledge sharing across departments or schools or grades.</td>
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